PLAY AND PLAYFULNESS AMONG HOSPITALIZED CHILDREN: A MIXED METHOD ANALYSIS

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To the Dean of the Graduate School:

I am submitting herewith a dissertation written by Katherine S. Ryan entitled, "Play and Playfulness among Hospitalized Children: A Mixed Method Analysis." I have examined this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy with a major in Occupational Therapy.

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ABSTRACT

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PLAY AND PLAYFULNESS OF HOSPITALIZED CHILDREN: A MIXED METHOD ANALYSIS

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Play is one of the most important childhood occupations. Children who are hospitalized are at risk for decreased opportunities to play and exude playfulness. The purpose of these three inter-related studies was to investigate how play occurred within the hospital and to evaluate if playfulness was different between the home and hospital environments.

Study one 1 utilized an ethnographic qualitative design and sought to answer the question, "How does play occur among hospitalized children? Multiple videos were taken of three participants throughout the course of their hospitalization and analyzed. Thematic analysis revealed 25 themes that emerged related to the environment, physical, social, toys, and pleasure categories. Overall, the children were found to play even without structured support and cooperative play was found to improve overtime.

Study 2 evaluated the level of playfulness in the home compared to the hospital among eight participants. The Test of Playfulness was utilized to evaluate the children's playfulness during 15 minute video observations taken prior to hospitalization, at

admission, and at discharge. Findings revealed that playfulness was significantly similar in both the home and the hospital and that playfulness increased from admission to discharge.

Study 3 involved watching the same participants' videos as in Study 2 to evaluate the positive and negative elements of the environmental supportiveness. The Test of Environmental Supportiveness was used to analyze the positive and negative elements of the environment. Results indicated there were no differences in positive or negative elements of the environment across time or within different settings. Additionally, no significant relationships were found between playfulness and positive or negative elements of the environment indicating that the children were playful independent of the elements of environmental supportiveness.

Finally, Chapter 6 offers an overview of the findings of all three studies, synthesizes the information in relation to previous literature about play among hospitalized children, addresses limitations, provides implications for future research, and discusses the clinical implications of this study for the occupational therapy profession as well as other health care professions to maximize the playfulness of hospitalized children.

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CHAPTER I

INTRODUCTION

Play is considered one of the most important childhood occupations. Play facilitates cognitive development (Piaget, 1962), language (Bruner, 1972), social skills (Parten, 1932), and psychosocial development (Freud, 1961, Erikson, 1963). In addition, play provides children a vehicle through which they adapt to occupational challenges and form a sense of competency that fosters continued adaptation to challenges throughout their lifespan (Reilly, 1974). Play is a method of achieving mastery within the environment. The quality of play or the degree of playfulness is an expression of adaptiveness.

A unique environment that provides exceptional adaptation challenges for children is the hospital. Hospitalization can produce major stressors for children that may limit their opportunities for play. Play is a crucial activity and therefore a vital occupation for children to participate in while they are hospitalized. It is important, therefore, to further investigate how play occurs in the hospital setting, how play occurs in the hospital compared to the home environment, and how the hospital environment affects play.

Statement of the Problem

Play is considered one of the most important childhood occupations. Play facilitates cognitive development (Piaget, 1962), language (Bruner, 1972), social skills

(Parten, 1932), and psychosocial development (Freud, 1961; Erikson, 1963). In addition, play provides children a vehicle through which they adapt to the occupational challenges they face and form a sense of competency that fosters continued adaptation to challenges throughout the lifespan (Reilly, 1974). Playfulness is an expression of a child's adaptation. Playfulness is the stylistic approach one exudes when approaching situations with a creative, flexible, and open manner. Playfulness expresses the quality of how a child plays.

Childhood hospitalization creates a unique environment that provides exceptional challenges for children to achieve mastery over their environment. Hospitalization can produce major stressors for children that may limit their opportunities for play. Childhood hospitalization can create feelings of anxiety (Board, 2005; Clatworthy, 1999; Koller, 2008b), homesickness (Thurber, Patterson, & Mount, 2007), pain (Board 2005; Kortesluoma, Punamaki, & Nikkonen, 2008; Stefanatou, 2008; Thurber et al., 2007), fear (Abbot, 1990; Shannon, 1984) and guilt related to viewing hospitalization as a consequence for bad behavior (Abbot, 1990; Shannon, 1984; Wikstrom, 2005). Additionally hospitalization has been found to produce negative effects on children's play skills. Children who are hospitalized have been found to display delayed play skills compared to typically developing children (Gariepy & Howe, 2003; Kielhofner, Barris, Bauer, & Shoestock, 1983), decreased levels of playfulness (Kielhofner et al., 1983) and decreased variation in their play routines (Gariepy & Howe, 2003; Adams, Zhar, Killen, Cameron, & Wasson, 1996; Kielhofner et al., 1983). Considering that play is a vital

childhood occupation and that pediatric hospitalization can limit opportunities for children to engage in play, there are very few studies that investigate how children play in the hospital and how the hospital environment facilitates or hinders playfulness among children. This study investigated how play occurs among children in the hospital environment.

Statement of the Purpose

The purpose of this research project was to investigate play and playfulness among hospitalized children. Very few studies exist that evaluate how children play in the hospital. When children are not involved in medical procedures, therapies, self-care activities or structured Child Life activities, how do they play and exhibit playfulness? Three inter-related studies were designed to answer the following research questions: 1) How do children play in the hospital? 2) Is playfulness among children different in their home environment compared to the hospital environment? and 3) Does the hospital environment help or hinder children's playfulness? Results of these studies provided research implications on how occupational therapists can facilitate play among children in order to improve their adaptation to the challenges incurred by hospitalization.

Significance of the Proposed Studies

Pediatric hospitalization can create a major interruption to both a parent and a child's life. For a child, hospitalization means a potentially frightening separation from his or her parents, from a familiar environment, from school, and from favorite toys or peers. As Board (2005) asserts, childhood memories from hospitalization can be negative

and long lasting. Studying how hospitalization affects children's ability to engage in play elicits a better understanding of how the health care team can modify the hospital environment in order to facilitate play and ensure the promotion of playfulness to the greatest degree possible. Additionally, results of this study provided important implications for other disciplines such as Child Life specialists, architects, and interior designers for how to better design the hospital environment to facilitate accessibility to play areas.

Researcher Perspective

Patton (2002) proposes that it is essential to reveal the researcher's perspective prior to data analysis in order to identify potential sources of bias that may result in certain interpretations of the qualitative findings. The principal investigator in this dissertation is an occupational therapist, who was employed at the pediatric rehabilitation hospital as both an inpatient and outpatient occupational therapist working with children ages' birth to 18 years with various medical and developmental diagnoses. In her doctoral studies in occupational therapy, the principal investigator specialized in advanced pediatric practice, child development, and play therapy. The principal investigator also developed specialization areas in autism spectrum disorders, feeding disorders, and learning disabilities. The principal investigator moved to another state and accepted an assistant professor position as the pediatric educator of occupational therapy program at a small private university.

Since the principal investigator researched Bundy's model of playfulness a great deal in graduate school courses as well as for this dissertation, the principal investigator may have approached the observations with a greater emphasis on the components of playfulness. Additionally, since the principal investigator has received professional training in and utilizes Dunn's model of sensory processing and Ayres' model of sensory integration in pediatric practice, the principal investigator may have been more attentive to sensory processing behaviors occurring during play.

CHAPTER II

REVIEW OF THE LITERATURE

Play as a Method of Achieving Mastery

Both classic and modern theories of play suggest that play provides a method for children to achieve mastery over their environment. Groos (1898, 1978) considered play to be an evolutionary activity in his Pre-Exercise Theory. According to Groos (1898, 1978), in the human species, play is considered an important mechanism for children to develop the adaptation skills necessary for adulthood. In addition, the recapitulation theory proposed by Hall in the later part of the nineteenth century similarly qualifies plays as an evolutionary process (Hall, 1978). Play was viewed as an opportunity to evolve and develop more complex skills to master the environment. During the process of play, children were thought to rid themselves of primitive strategies and skills.

Mid century-theories such as the cognitive, psychoanalytic and sociocultural theories of play additionally propose the notion of play as a process for achieving mastery (Erikson, 1963; Freud, 1961; Mead, 1934; Parten, 1932; Piaget, 1962). Piaget (1962) theorized that play was a process to build cognitive development and also the result of learning. When a child imitates an action in play, the child assimilates the knowledge gained from the experience with the previous knowledge, which modifies the existing mental structures. Piaget's schema of play identified play behaviors associated with

cognitive abilities. Piaget developed a stage theory of play categorizing play into sensorimotor, preoperational, operational, and game play based on ontogenetic and cognitive development. Smilansky (1968) expanded and renamed Piaget's levels of play. He asserted that play evolves through the stages of functional, constructive, dramatic, and play with rules. These cognitive theorists asserted that through play a child is able to acquire new knowledge

Psychodynamic theories proposed by Freud and Erikson in the mid twentieth century purported that play enables the child to gain mastery over the environment. Freud suggested that play allowed children to become someone else or possess different qualities than the capacities they were currently capable of. This satisfying the desire to become something else was termed wish fulfillment. The second purpose of play according to Freud (1961) was to enable the child to overcome traumatic events. Erikson (1963) expanded on Freud's theory of mastery over the environment and stated that play promotes coping skills. Erikson believed play provided a safe environment for the child to enact situations that may be fearful or causing anxiety. The child is able to process through different solutions and resolves the challenge in a way that may not be possible in reality. The experiences gained from working through the difficulties were thought to promote the coping that is necessary for the remainder of the lifespan. Both Freud and Erikson suggested that children who have encountered traumatic events must often replay or re-enact events over time in order to make sense of the situation and heal from the emotional damage. Similar to Freud and Erikson's views that play is segmented into re-

enactments of lived experiences; Klinger (1969) proposed that play evolved by piecing scenarios together as a method of assimilating new knowledge. According to Klinger, play occurs secondary to intrinsic motivation. He emphasized the important role of fantasy and hypothesized that play involves fragmentation and pre-established bits. Fragmentation entails breaking play activities into separate elements. These elements can later be pieced together with existing information to create new play experiences.

Sociocultural theorists of play recognized that play enables children with the opportunity to engage with peers and master their social environment. Parten (1932) explored the development of social participation during child development and classified stages in her Social Play Hierarchy. The six stages included unoccupied behavior, solitary play, onlooker behavior, parallel play, associative play, and cooperative play. She found that children display increased levels of participation as they mature. Mead (1934) proposed that cooperative play with peers allows children to learn the rules of the game, organization, and society. Games require the child to participate in turn taking, attentive listening or observing, and responding appropriately. To be successful in playing games, the child must follow the rules as set forth and accept the consequences of fate or chance appropriately. The medium of play develops the attainment of pragmatic social knowledge that is important to sustain adult roles in the future.

Later in the twentieth century, the notion of play as a medium through which children learn to master their environment was also a recurrent theme among occupational therapy theories of play. Among occupational therapy theorists, play is

recognized as a valuable childhood occupation that enables children to develop competence and prepare them for adaptation during adulthood (Bundy, 1993; Reilly, 1974; Stagnitti, 2004). Mary Reilly was one of the most influential voices within the profession of occupational therapy to reintroduce play as a necessary area for occupational therapy evaluation and intervention. Reilly (1974) proposed an explanation of play using a General Systems Theory approach. Borrowing ideas from former play theorists, Reilly devised a multi-leveled approach to play. Play was theorized to have substratums such as the neurological, symbolization, and language substratum. Reilly also posited that play is transformed through behaviors. Exploratory behavior was aligned with sensorimotor epochs as mentioned in Piaget's (1962) schema. Emphasis within this phase is doing activity for activity's sake not to achieve a goal-directed end. The competency behavior phase of play follows exploratory play and emphasizes the child's ability to actively influence the environment, receive feedback from it, and master it independently. This stage of play is considered vital to developing self-confidence and self-efficacy. Achievement behavior integrates acquired skills obtained from the previous two stages. These behaviors involve striving for improved performance against a set standard. Goal-directed behaviors predominate in this phase of play, resulting in the production or achievement of a desired outcome.

In the late 1960s and 1970s, play became a more researched construct within occupational therapy. Not only were new theories of play being postulated, but also new instruments were being developed to assess play (Knox, 1974; Michelman, 1974; Takata,

1969). Nancy Takata proposed the Play History as a method for clinicians to gain a greater understanding of a child's past play experiences, observe active play, and provide a prescription for improving play. Takata (1969) defined play as "a volitional activity characterized by 'fun' and calculated to excite and amuse the individual. It may be neuromuscular, sensory, mental, or a combination of all three" (Takata, 1969 p.314). Play is considered a dynamic medium for the child to interact in and learn from his environment. According to Takata (1969, 1974) play is also a learning process that involves action and attitude. Knox (1968) defined play as "the medium through which the child learns about himself and the world around him. It is that spontaneous activity through which he rehearses, experiences, experiments, and orients himself to the actual world" (Knox, 1968 p. 5). The Play Scale, which was later revised and named the Preschool Play Scale, was established as a play observation scale to assess space management, material management, imitation, and participation (Knox, 1968, 1974). Within each subsection of the Preschool Play Scale, the occupational therapist evaluates how the child is achieving mastery by manipulating toys or objects and his own body in space (Knox, 1997, 2008). Michelman (1974) suggested that occupational therapists played a significant role in evaluating play skills in children with disabilities because without opportunities to play and explore, they were at risk for further delay in the areas of sensory, perceptual, and intellectual capacities. She described play as an artful experience that led to symbol formation and the acquisition of hierarchical developmental skills. Hurff (1974) expressed that pre-adolescent children were often left out of play

assessments, which have typically focused on early childhood play development. She compiled 20 test batteries into the Play Skills Inventory that evaluated sensation, motor, perception, and intellect skills.

In the 1990s, play re-emerged as an important topic within pediatric occupational therapy (Bundy, 1993, 1997; Stagnitti, et al., 1997; Sturgess & Zivani, 1995). Bundy, a play theorist within occupational therapy emphasized the dual nature of play. According to Bundy play is both a method and a process to achieve mastery. Play can serve as a method of achieving mastery and is commonly used as an intervention tool by occupational therapists to elicit mastery (Bundy, 1993, 1997). However, Bundy (1993) suggested that play, unlike other childhood occupations that may have goal-directed purposes such as self-help or academic occupations, is process-oriented (Bundy, 1993, 1997). Play does not require an end product or need to meet certain criteria like other childhood occupations such as tying one's shoes or producing written letters. Through play, a child develops mastery even without it being the intentional motivation for playing. When a child is able to work through challenges while exhibiting joy, spontaneity, and flexibility, a child is thought to be playful (Lieberman, 1977). Bundy (1993) termed this creative stylistic approach to problems as playfulness. Playfulness is the expression of a child's adaptation. In order for a child to achieve mastery through play, the child must possess internal qualities that enable the child to work through problems, adapt to challenges posed by the environment, and creatively construct solutions.

Play as a method to achieve mastery has been a prevalent theme throughout classic and modern theories of play. Play enables children to observe their world and take action within it. Through play children are able to assimilate new ideas, problem-solve, and work through problems or trauma. Play allows children an opportunity to develop adaptive responses to meet life's future challenges. When a child is successfully able to work through problems and make sense of their world through play, a child is considered playful. If play is a method of achieving mastery, then playfulness is the expression of a child's adaptation. Playfulness represents the degree or the quality of a child's adaptiveness.

Playfulness as an Expression of Adaptiveness

Bundy (1993) as well as Skard and Bundy (2008) assert that playfulness is style an individual uses to approach problems or activities that is characterized by flexibility, creativity, and open-mindedness. Bundy (1993) proposed a model of playfulness that outlines four critical elements: intrinsic motivation, internal control, freedom to suspend reality, and framing that influences the level of playfulness a child exhibits. Intrinsic motivation is the child's internal desire to select and participate in an activity that is pleasing to him or her. This intrinsic motivation may arise from desire for social interaction, a sense of mastery and accomplishment, or for the sensory stimulation the activity provides. Internal control refers to the child's ability to "be in charge" of themselves and the outcomes of the activity. Children may assert internal control by modifying or adapting rules (Bundy, 1993; Skard & Bundy, 2008). Freedom to suspend

reality is the ability to adjust the norms or rules for the purposes of play. Children may pretend play different roles or impose a different function on an object that an object does not usually have. For instance, a child may pretend a telephone is a helicopter or pretend to be a doctor and use various objects to "examine the patient." Imaginary play relies heavily on the ability to suspend reality. Additionally, framing is another aspect that influences play. Framing is the giving and receiving of social cues that children establish during play (Bundy, 1993, Skard & Bundy, 2008).

Playfulness has been associated with adaptation and coping skills among children (Hess & Bundy, 2003; Saunders, Sayer, & Goodale, 1999). Adaptation is an important feature for human survival and wellbeing. An individual who is adaptive is able to combat problems and create solutions. The occupational adaptation model within occupational therapy suggests that adaptation arises when there is a press for mastery between the person and the environment (Schkade & Schultz, 1992). When a person is presented with an occupational challenge, the individual must draw from his personal reservoir of traits including cognitive, motor, and psychosocial attributes in order to approach the challenge. The environment, with its physical, social and cultural features, places a demand on the individual. Each individual must develop an internal adaptation process to meet the challenges faced. The achievement of this adaptation may be referred to as relative mastery. The individual gains satisfaction through efficiency, effectiveness, and perception of satisfaction to self and others.

The occupational adaptation model purports that there are three types of adaptive response behaviors, which include primitive, transitional, and mature (Schkade & Schultz, 1992). Primitive responses are static in that the individual attempts to approach the problem in the same manner as he always has before. Even if the strategy does not work, the individual with a primitive response pattern continues to approach the problem with the same strategy. Transitional responses involve the individual attempting numerous and varied strategies to approach an occupational challenge without properly evaluating the consequences. The third type of occupational response is a mature response, which is a balance of hyper stable and hyper mobile responses.

Through play children are able to express their adaptiveness. In play, a child is able to approach new situations or problems in a creative manner that allows the child to work through problems and devise solutions. This creative problem solving, viewed by others as the child "simply having fun," is produced from the interaction of the child's internal drive to meet the demands of the environment. When presented with a challenge, the child must pull from a previous experience and rely on cognitive cues, psychosocial factors, and motor attributes in order to approach the problem. The child must also assess the environmental and task demands, which are influenced by physical, social, and cultural features.

Children exhibit varying levels of occupational response behaviors through playfulness. Children who display high levels of intrinsic motivation, internal control, freedom to suspend reality, and framing have higher levels of playfulness (Bundy, 1993;

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Skard & Bundy, 2008). As described in the model of occupational adaptation children who are able to approach a problem playfully using a flexible, creative manner are able to generate mature response patterns. The concept of transcending reality plays a vital role in making a mature response pattern possible for children. For example if a child encounters a new toy that he or she does not know how to operate he or she may attempt to manipulate it in different ways. A primitive response may be to try to operate the toy in the same way the child operates other toys. A child who realizes that method does not result in making the toy work may try a variety of other strategies to make the toy work such as banging it, pushing all the buttons, or hitting it against a table. A mature response would involve the child considering how he or she successfully operated other toys from the past and modifying those methods to the new toy. In order to achieve this mature response, the child must be flexible and willing to try different options. However the child must also be able to modify previous experiences in a creative manner to develop new solutions. A child who can imagine alternative possibilities, make up rules, and suspend the traditional rules imposed by reality, is better able to creatively approach problems (Skard & Bundy, 2008).

Once an individual has responded to an occupational challenge, the individual must evaluate how successful the response was (Schkade & Schultz, 1992). In the occupational adaptation model, this process of evaluating the success of one's response is termed the adaptation response evaluation sub process and is measured by relative mastery. Relative mastery is the assessment of the response's efficiency, efficacy, and

satisfaction to self and to others in the environment. For a child who is engaged in play, the degree to which the child continues to engage in the activity and exude playfulness is dependent on relative mastery. A child who is finding the play activity effective for producing joy or sensory stimulation or thrilling for his or her competitive spirit will continue participating in the play activity. Likewise, a child who believes his or her playful actions are worth the time and effort being exerted to perform them will continue to perform them. Perhaps the most important factor affecting a child's degree of playfulness is the child's perception of satisfaction to self. If the child enjoys the activity and is satisfied with the effect that his or her actions are having on impacting the environment, then the child will continue to perform the play activities. Bundy (1993, 1997) similarly suggests that intrinsic motivation is an integral component of playfulness. The concept of framing is linked with satisfaction to others and the environment. Framing is the child's ability to recognize social cues from the environment and others. This concept of reading the cues of others such as "come play with me" or "that's too rough" is an important aspect for the child to cooperatively engage in play with others. For example, if two boys are pretending to have a sword fight with wooden sticks, it is important for the boys to be able to detect if they are hitting too hard, and if there is shared enjoyment among both parties to sustain the activity. If one of the boys is hitting too hard and the other boy says, "That's too rough," then the first boy must re-adjust his force of hitting the stick so as to not discourage the second boy from playing. Similarly a little girl who is playing dolls with other little girls must pick up on subtle social cues

provided from the other playmates about how to dress the dolls or what the dolls should say in order to promote optimal cooperative play.

Playfulness is associated with adaptability and coping skills among children (Hess & Bundy, 2003; Saunders, et al., 1999). Coping involves approaching a problem from multiple vantage points, being open to various solutions, flexibility, and adapting to the demands of the environment. Children who approach situations with a flexible, positive approach are considered more playful (Skard & Bundy, 2008). Various studies have examined the relationship between coping and playfulness. In a study investigating the relationship between playfulness and coping among preschool children, Saunders et al. (1999) found a significant moderate correlation between playfulness and coping as measured by the Test of Playfulness (ToP, Bundy, 1994) and the Zeitlin Coping Inventory (Zeitlin, 1985). Though no significant differences were found for age and gender, trends were detected. Girls displayed higher averages for coping skills and playfulness than boys. Younger children displayed higher scores in coping than older children, but decreased levels of playfulness than older children. Differences in playfulness levels were attributed to variation of the play arena from structured and directed settings to more child-centered play environments. Similar to the findings of Pass and Bolig (1993), the type of play behaviors exhibited by children may have been highly dependent on the environment for supporting play.

Playfulness and coping appear to be linked even during older childhood and adolescence. Hess and Bundy (2003) investigated playfulness and coping in 30 male

adolescents' ages 14 to 17 years with and without severe emotional disturbance. Analysis revealed a positive correlation between playfulness as measured by the Test of Playfulness (ToP, Bundy, 1998) and coping as measured by the Coping Inventory (Zeitlin, 1985). Typically developing adolescents demonstrated higher levels of playfulness and coping as measured by the Adaptive Behavior Index of the Coping Inventory. This study suggests that coping and playfulness share common characteristics. Both are self-directed and tend to involve creative strategies. This study purports that adolescents with greater levels of playfulness exhibited greater adaptability and coping mechanisms. Alternatively, adolescents with severe emotional disturbance showed fewer strategies of coping, less adaptability, and poor ability to problem solve and set goals.

Playfulness is defined by Bundy (1993) as a stylistic manner for approaching problems with flexibility and creativity. Therefore, playfulness can exist despite physical limitations. Several studies have investigated playfulness among children with and without disabilities. Despite their potential physical limitations, children with physical disabilities were found to exhibit playfulness due to their compensation strategies to playfully engage with what they were able to (Morrison, Bundy and Fisher, 1991; Skard & Bundy, 2008). In a study by Okimoto, Bundy, and Hanzlik (2000), the ToP was used to assess playfulness among children with cerebral palsy and developmental delays as they played with their mothers. Though both groups displayed significantly lower scores on the ToP than typically developing children, the children whose mothers were provided strategies to facilitate playfulness, displayed significantly higher scores following

intervention. This finding suggests that children with disabilities are able to exhibit playfulness but may benefit from environmental support to facilitate their play such as having appropriate toys available or having parents interact and position children in ways to foster play.

Playfulness occurs across all individuals, but the degree of playfulness be influenced by an individual's relative mastery. If a child believes his or her playful actions are effective, efficient, and satisfying to the self and others, then the child will exhibit a higher level of relative mastery. The internal control, intrinsic motivation, freedom to suspend reality, and ability to frame the play scenario similarly influence how a playful or adaptive a child may be when approaching an occupational challenge. When a child is able to approach a situation with an open-mind, creativity and flexibility, then a child is expressing adaptiveness.

Pediatric Hospitalization

Adaptive behavior is visible in playful behaviors. Playfulness is most likely to emerge in a familiar and safe environment (Bundy, 1993; Skard & Bundy, 2008). However, this optimal environment is not always possible. Children who experience trauma, chronic disease, medical problems, or significant mental illness may be abruptly taken out of familiar environments and placed in hospitals. Nursing, psychology and child development fields have added to the literature regarding how children and parents respond to the demands of hospitalization.

Pediatric hospitalization can cause a major interruption to a child's and family's life. Not only is the child removed from the physical environments that are most familiar such as home, school, or playgrounds, but a plethora of other stressors can affect a child's psychosocial well being, achievement of developmental milestones, and ability to participate in daily occupations. Pediatric hospitalization may lead to excess anxiety, fear, feelings of abandonment, and isolation from a child's world.

Numerous studies have suggested that pediatric hospitalization places significant amount of stress on children and their families (Abbot, 1990; Board, 2005; Clatworthy, 1999; Shields, 2001; Thurber, et al., 2007). Shields (2001) performed a meta-analysis examining literature from developing and developed countries on the effects of hospitalization on children and parents. Early studies in the 1950s, 60s and even 70s reported hospitalization to be an opportunity for growth for children. However, the majority of these studies did not use rigorous methodological designs to measure such effects nor did they account for examiner bias. One of the major themes found was that both parents and children were found to display increased anxiety due to hospitalization. The studies examined revealed that parental involvement and education about the medical procedures was crucial in decreasing levels of anxiety and making the hospitalization experience more positive. Separation from their children and lack of control over their children during surgery and hospitalization were other significant parent-stressors reported. Parents reported that the provision of developmentally appropriate care for their children from hospital staff improved the hospitalization

experience. Shields (2001) suggested that proper training of health care providers and allied health professionals involve education on cognitive and physical development of children throughout childhood in order to foster age-appropriate instruction for the children about medical procedures.

Thurber, Patterson, and Mount (2007) compiled a list of predictors of psychological maladjustment for hospitalization among children based on relevant literature. Predictors included 1) previous separation experience from caregivers, 2) emotional/ behavioral status of the child prior to hospitalization, 3) family relationships prior to hospitalization, 4) illness and stressors related to hospitalization, and 5) social supportiveness during hospitalization. Often younger children have had fewer separation experiences from their parents and have limited cognitive understanding of the purpose for hospitalization, which may lead to increased anxiety. Shannon (1984) proposed that toddlers are at great risk of developing anxiety and stress due to hospitalization because of their level of cognitive development. Toddlers may not be able to express their feelings through language and cognitively may not understand the reason for hospitalization. They may think that hospitalization is due to punishment or a complete lack of love from the parents. Toddlers may feel abandoned.

This concept of hospitalization as a result of bad behavior has been found to be common amongst young children (Abbot, 1990; Shannon, 1984; Wikstrom, 2005). Abbot (1990) interviewed a young child using puppet play and drawing as therapeutic mediums. The child often made references to punishment as the reason for why the character was

hospitalized. Kortesluoma, Punamaki, and Nikkonen (2008) found that hospitalized children displayed lower cognitive skills as evidenced by their drawn depictions of pain. Hospitalized children often drew themselves undergoing medical intervention with little ability to manage their own pain compared to non-hospitalized peers. This finding corroborates the notion that because of their limited cognitive ability to understand the rationale of hospitalization, children often develop a causal relationship between their actions and the resulting pain. Stefanatou (2008) found that even children with pervasive developmental disorder associated their hospitalization experience as a form of punishment as indicated by their drawings. Despite language deficits associated with this diagnosis, these children were able to articulate their perceptions that they had done something bad or had received bad luck and thus were forced to be hospitalized.

Physical pain has been attributed as a common source of anxiety for hospitalized children. Board (2005) evaluated perceptions of hospitalization among school-aged children who were admitted to the pediatric intensive care unit. This study involved the use of mixed methods by utilizing a semi-structured interview, *Schoolagers Coping Inventory* as well as the *Childhood Drawing: Hospital Assessment*. Children reported remembering painful procedures and feeling sick or bad, but they also recollected positive experiences from caring staff and having visitors. Children were found to demonstrate decreased coping and high levels of anxiety, which may have been due to decreased opportunities for play and interaction with non-sterile objects. Kortesluoma, et al. (2008) reported that when hospitalized children were asked to draw a picture of

something painful, 54% of them drew pictures of pain being inflicted on a person by medical actions or procedures, whereas only 18% of non-hospitalized children did. Additionally, hospitalized children were found to demonstrate emotional expression associated 10% of the time while their non-hospitalized peers projected emotions in 27% of their drawings (Kortesluoma, et al., 2008). Thurber, et al. (2007) found that reported levels of pain among hospitalized children were found to vary depending on the type of diagnosis for which children were hospitalized. Children who were hospitalized for burns reported higher levels of pain than children with physical injuries requiring rehabilitation and children hospitalized for mental illness.

Thurber, et al. (2007) also found that in addition to anxiety, children who were hospitalized tended to show increased levels of homesickness compared to children who were separated from parents for other reasons such as boarding school or summer camp. The researchers sought to measure homesickness among hospitalized children on the burn, rehabilitation, and psychiatric units in relation to depression, anxiety, and demographic predictors. No significant differences were found in homesickness between diagnostic groups or gender groups, although there was increased homesickness reported among all hospitalized groups compared to the mean score for homesickness among children during summer camp. Homesickness was not found to be significantly correlated with depression; however, it was significantly correlated with anxiety as measured by the Revised Children's Manifest Anxiety Scale (RCMAS, Reynolds & Richmond, 1978) and Rate Your Day- Revised Negative Emotion Scale (RYDR, Thurber

& Sigman, 1998). Children who had experienced more previous separations from home were found to have higher levels of homesickness as were children who had more foster care placements. Homesickness was not found to be significantly correlated with stressful home events, socioeconomic status, or living with one versus both of biological parents. Three subscales of the Children's Hospitalization Attitudes (CHA, Thurber et al., 2007), trepidation, expectations of homesickness, and perceived distance were found to be reliably correlated with increased levels of homesickness among hospitalized children. Results additionally indicated that contrary to researchers' hypothesis, homesickness was not significantly related to parental anxiety.

Children who are exposed to prolonged hospitalization are at risk for developing boredom. Kuntz, Adams, Zahr, Killen, Cameron, and Wasson (1996) suggested that children may become disinterested in participating in typical childhood occupations due to pain, isolation restrictions, or depression. Kuntz et al. (1996) described the hospitalization process of a 7 year-old boy in a bone marrow transplant unit who was diagnosed with diversional activity deficit characterized by decreased affect, limited interest in activity, and extended bed rest. The nursing staff, in collaboration with the Child Life specialist, created opportunities for him to play with age-appropriate sanitized toys, speak with friends and family through the internet and telephone, and collaborate with his therapists to create a daily schedule of therapy and designated leisure time. Over the course of his hospitalization, the child displayed increased interest in playing, less sleeping throughout the day, and increased positive affect.

Pediatric hospitalization can create unique stressors for a child and his family. Children who are hospitalized are at risk for increased levels of anxiety, self-blame, homesickness and boredom. Depending on the child's developmental stage, the child may have difficulty understanding why he or she has been hospitalized and may attribute hospitalization as a punishment for something bad that he or she has done. Children who are hospitalized are removed from familiar environments and may have few opportunities to play. Since playfulness is an expression of a child's adaptiveness, a child who exhibits less playful behaviors in the hospital may be signaling difficulty coping with the stressors and adapting to the challenges of hospitalization.

What Does Play Look Like in the Hospital?

With so many potential sources of stress, the notion of hospitalization and play may seem incompatible. Most hospitalizations occur due to illness, disease, or medical management of health conditions. Children often endure intensive medical procedures and encounter significant pain (Board, 2005; Clatworthy, 1999). Many children may display fatigue, decreased endurance, or pain that may inhibit them or discourage them from playing. Other than therapeutic play during Child Life sessions, children in the hospital may have little time allotted for free play. Numerous studies from Child Life literature have measured the effect of therapeutic play within the hospital in reducing children's anxiety, resistance to medical procedures, and boredom and additionally in improving coping skills. (Abbot, 1990; Kuntz, et al., 1996; Li & Lopez, 2007; Zhar, 1998). However, few studies have utilized qualitative data methodology to assess how

children play in the hospital setting. Do children spontaneously play in the hospital? What does it look like?

Pass and Bolig (1993) conducted a descriptive study to describe and compare the playroom versus individual/non-playroom play of preschool children, ages 2.5 to 5.5 years who participated in Child Life therapy at two different hospitals. One hospital was a pediatric, 313-bed hospital with eight different Child Life playrooms. For this study four playrooms served as observation settings: hematology/burn, oncology, and two general medical units. The other hospital was general hospital with 1225 beds and a 40-bed, pediatric unit. There was one playroom in the general hospital. In the pediatric hospital, all toys and staff were divided among all playrooms resulting in 20, 46, and 10 play spaces respectfully. The pediatric playrooms remained opened throughout the day and had fewer structured play sessions with the Child Life therapists. In contrast, the playroom in the general hospital housed 92 play spaces. The playroom of the general hospital was only open during certain hours and Child Life therapists were present. Participants included 11 boys and 4 girls among both settings, with an average age of 4.82 years and an average length of stay of 4.06 days. Observations were performed during one week's time frame only in the playrooms for 1 minute observations followed by 1 minute record increments for 15 minutes per child for a total of 8 observations made of each child using Bolig's (1984) type of play (normative, educative, and therapeutic), Parten's (1932) social play (solitary, parallel, or group), and Rubin et al.'s (1982) cognitive play (functional constructive, dramatic, games with rules, and rough and

tumble). The majority of the children had no or minor limitations to mobility and participation such as intravenous pump, while 13% of children had major limitations such as a wheelchair or spica cast. Fifty-three percent of children did not have a parent present during observation. Sixty percent of the children were hospitalized for medical purposes whereas 40 % were hospitalized for surgical reasons. Eighty percent of the children had been hospitalized previously. Results of the study are difficult to generalize due to the non-randomization of the sample, small sample size, varied level of experience of the Child Life therapists, and different play environment resources. However, there were interesting themes that emerged. The frequency and type of play interactions among children were not found to be significantly different among the different Child Life hospital settings. Therapeutic and educative play seemed to approach significant levels when a Child Life therapist directed play in the playroom versus non-playroom directed focus. On average, between both hospitals children participated in play 65% of the time: group 29%, solitary 22%, constructive 17%, functional 15%, dramatic 14% and normative 58%. Significant differences were found for gender, length of hospitalization, and frequency of hospital visits. Boys were found to participate in more constructive play than girls whereas girls were observed to partake in more onlooker behavior. Children who were hospitalized for longer demonstrated more educative and rough and tumble play and less exploratory play than those children who were hospitalized for a shorter amount of time. It was observed that children took about 3 days to "warm up" and start playing. The play was also initially found to be more functional. Children who were

hospitalized for surgical procedures were found to display more un-occupied and reading behavior than children who were hospitalized for medical reasons. The type of play that children exhibit in Child Life playrooms appears to differ depending on gender, length of stay, and level of involvement from hospital staff. This study illustrates the need for future research to evaluate the type of play, the structure of the playroom, gender differences, and length of hospitalization among children who are hospitalized.

Children with leukemia often experience numerous hospitalizations. Gariepy and Howe (2003) investigated play among 11 children hospitalized for leukemia treatment, ages 3.1-5.5 years with 11 age-matched typically developing peers. Quantitative measures were taken to evaluate the hospital environment and the child's mood, stress level, and play behaviors. Though this study utilized primarily quantitative methodology, video observations were taken of each child 4 times per week over 6 weeks. These videos were analyzed to assess play disruptions, recurrence of themes, self-reported anxiety in relation to play, and type of play between hospitalized children and non-hospitalized children. Children who were hospitalized displayed more non-play behaviors than play behaviors when compared to the control group, indicating that hospitalized children may be too anxious to engage in play behaviors. Hospitalized children were found to repeat play actions from week to week with little variation in the use of toys in an innovative manner or selection of toys or activities with which they engaged. Gariepy and Howe (2003) suggested that this finding supported Erikson's (1963) proposal that children who have experienced trauma often will re-enact or replay the situation they encountered in

order to gain a better understanding and achieve mastery. The stress and mood inventories revealed that when hospitalized children exhibited high levels of anxiety or stress, they tended to engage in higher levels of solitary play. Moreover, hospitalized children displayed overall less parallel, group, and dramatic play than non-hospitalized children.

Kielhofner, Barris, Bauer, Shoestock, and Walker (1983) compared play between hospitalized and non-hospitalized children. Six children (three hospitalized, and three age-matched non-hospitalized peers) were videotaped playing in three environments 1) natural play environment with caretaker participating hospital play room for hospitalized group and the typical play space at home for non-hospitalized children, 2) standardized play environment with the caretaker present, but not actively initiating play, and 3) in the standardized environment with the caregiver participating in play. The children were videotaped for 30-minute sessions in the natural environment and 20 minutes in the standardized environment. Quantitative tools included the Preschool Play Scale (Knox, 1974), which was used to evaluate play age and Lieberman's Playfulness Scale (Lieberman, 1977), which was used to assess playfulness. The Preschool Play Scale is a normative assessment that produces a play age score, which compares a child's level of play to the typically developing child's play based on chronological age (Knox, 1974). A separate researcher performed observational qualitative data analysis by watching each video and writing a detailed description of each child while playing. The play descriptions were compared with the quantitative results to support findings. Statistical

analysis revealed that hospitalized children displayed lower developmental play ages and levels of playfulness than non-hospitalized children. In terms of developmental play age activities, hospitalized children were found to show less interest in manipulating toys and observing their own effect on the toys and the environment. Additionally, the hospitalized children were less apt to engage in symbolic play, develop elaborate play routines, or vary their actions with toys. They were noted to perform fewer play behaviors within the span of the video when compared with non-hospitalized children. In relation to level of playfulness, hospitalized children were observed to display fewer gleeful expressions such as happy vocalizations, smiling, or signs of excitement when engaging with toys. They were noted to move slower and with less enthusiasm than their non-hospitalized peers. According to observations, the hospitalized children were reported to "be less joyful and free" (Kielhofner, et al., 1983, p. 310).

The aforementioned studies reveal that play does occur in the hospital setting. However, play may need to be facilitated by Child Life specialists, occupational therapists, other health care members or family members. Children who are hospitalized have been found to display fewer spontaneous play behaviors, less variation in play themes, decreased interest in play participation with peers, and decreased use of toys in an imaginary or dramatic way. This suggests that in addition to play behaviors, the quality of these behaviors or playfulness may have characteristics unique to the hospital setting. More study is needed in order to gain a better understanding of how play emerges in throughout the hospitalization stay.

Playfulness among Hospitalized Children and Non-Hospitalized Children

Play behaviors are expressed differently between children who are hospitalized and children who are not. In addition, there is some evidence that children in the hospital display decreased playful behaviors, less symbolic and dramatic play, and fewer occurrences of parallel or group play (Gariepy & Howe, 2003; Kielhofner, et al., 1983; Pass & Bolig, 1993). Playfulness has also found to be different between children who are hospitalized and children who are not hospitalized (Kielhofner, et al., 1983).

When comparing three two year-old children who had been chronically hospitalized to children of the same age who had not been hospitalized, Kielhofner, et al. (1983) found that hospitalized children displayed significantly lower of playfulness as measured by the Playfulness Scale (Lieberman, 1977) and lower developmental levels of play as measured by the Preschool Play Scale (Knox, 1974). Due to the small non-randomized sample, permutated F scores were used to calculate the statistical significance. Hospitalized children exhibited statistically significant lower playfulness scores and play age scores compared to non-hospitalized children.

Children who experience pediatric hospitalization are at risk for displaying less mature play skills compared to typically developing children who are not hospitalized. Gariepy and Howe (2003) investigated play amongst 11 children ages 3.1 years to 5.5 years with leukemia receiving weekly treatments in a hospital and 11 typically developing age and gender-matched peers. Children with leukemia were observed during free play in the waiting room of the oncology outpatient clinic, whereas typically

developing children were observed at a downtown day care center. Observations were made of the children over 6 weeks using a multiple-baseline design. Both play settings were found to be comparable as measured by the Childhood Environment Rating Scale-Revised. Each child's anxiety level was measured by having children rate pictorial cards. Children's social and cognitive play levels were measured by the Ruben Play Scale (Rubin, et al., 1978). Mood was evaluated using the Self-Distress Measure (McCabe & Weisz, reported in Weisz, et al., 1994). Anxiety level was assessed using the Stress Inventory (Chandler, 1981). Medical and non-medical toys were introduced and withdrawn throughout the study. Play observations were made using time sampling. Play was evaluated for recurrence of themes, type of social or cognitive play, and type of play as related to stress levels. Similar to the findings of Kielhofner, et al. (1983), children who had experienced hospitalization showed significantly fewer play behaviors than typically developing children. Hospitalized children were found to display significantly less variation in play activities as compared to typically developing children, supporting the hypothesis that children who had been hospitalized would demonstrate repetitive themes in their play. Children with leukemia were noted to select the same toys and participate in the same play activities throughout the study, whereas their typically developing peers displayed more flexibility in their play scenarios. Children's stress level was found to be significantly correlated with the type of play, particularly the association of feeling upset and the engagement in functional play. Increased social play was found to be associated with self-reports of feeling "happy." These findings suggest that

children who are hospitalized display different types of play and extent of play behaviors depending on their mood and anxiety level. When children are upset or in pain they may be too preoccupied to perform imaginative or constructive play. Additionally, they may prefer to withdraw from others during play to process their current stressors through play.

Though Gariepy and Howe (2003) did not utilize a specific playfulness measure, the results suggested that children who are hospitalized may display decreased levels of adaptiveness than typically developing children. When new toys were introduced, typically developing children displayed joyful interaction and reported being happy about the new toys. Children who were hospitalized tended to shy away from new toys in preference for familiar toys. Additionally, they tended to exhibit similar play routines throughout the study, demonstrating very little variation to their play routine (Gariepy & Howe, 2003). The model of occupational adaptation proposes that individuals who are able to approach situations with flexibility and the ability to balance primary and secondary energy to problem-solve an occupational challenge are better able to produce a mature response mode. Children who are hospitalized may not have the motor, psychological, or cognitive resources to expend in order to problem-solve how to use a new toy or engage in a game with others. When a child becomes stuck in a repetitive response pattern such as playing out the same play routine, he or she may have difficulty attaining occupational adaptation for being able to participate in meaningful play with others.

From the studies mentioned above, it is apparent that play and playfulness occurs differently among children in the hospital compared to non-hospitalized children. Research indicates that children who are hospitalized display decreased variation to their play routines, decreased engagement in parallel or cooperative play with peers, and less exploration of the play environment when compared to typically developing children. One drawback to the current literature on play and hospitalization is that there are very few studies that assess how play and playfulness occur differently in the hospital environment compared to the home environment. The situation of pediatric hospitalization makes data collection difficult. The majority of pediatric hospitalizations are emergent. Without warning that children are entering the hospital, it is difficult to obtain data on how children play prior to their admission to the hospital. Another factor that affects the ability to obtain pre-hospitalization information about play is that majority of pediatric hospitalizations involve a change in medical status such as trauma, respiratory distress, or other medical complications that may alter cognitive status, endurance, strength, motor performance, or language skills. In order to assess how playfulness differs at home compared to the hospital environment, it is important to assess differences across the same children. This type of repeated measures design will enable the ability to compare playfulness across environments and across time within the same children.

How Does the Hospital Environment Influence Play and Playfulness?

Play occurs within the context of the environment. According to the model of occupational adaptation, the occupational environment is constructed from contexts that avail occupations of work, play, leisure, and self-maintenance to occur (Schkade & Schultz, 1992). Physical, social and cultural subsystems comprise the occupational environment (Schkade & Schultz, 1992). Each of these subsystems influences how play and playfulness occurs. Children who are able to be playful are adapting to the demands of the environment. The pediatric hospital environment is unique in that it has its own physical, social, and cultural contexts that make it very different from typical childhood environments such as home, school or daycare.

Physical Environment

The physical environment has long been considered to have an important influence on development (Piaget, 1962; Neumann, 1971; Vygotsky, 1962). According to the model of occupational adaptation, the physical subsystem is composed of non-human features that influence an individual's occupational adaptation (Schultz & Schkade, 1992). Physical contexts can include natural features such as topography, sensory features including light, noise, textures, and smells, as well as constructed features such as objects, toys, or buildings (AOTA, 2008a). Children's play settings are very much influenced by the physical features of the environment. For example, children with physical disabilities may have more difficulty accessing their physical environment and therefore may exhibit different types of play. Howard (1996) found that children with

physical disabilities participated in far fewer organized sports but more computer and video game play than typically developing children. Children with disabilities may prefer more sedentary activities that reduce the need to move about, climb, swing, crawl, run, or slide (Howard, 1996; Okimoto, et al., 2000).

Outdoor physical play environments can present advantages and challenges to children. Playgrounds often contain materials that require active play such as climbing on equipment, sliding down slides, swinging on ropes, or riding on merry-go-rounds. Children who have sensory processing difficulties may have a difficult time interpreting where their bodies are in space and how much force their bodies must use in order to manipulate toys or play materials (Bundy, 1992, 1997; Hindmarsh-Hook, 2005). Even if children have the desire to play with others on the playground, they may lack the motor control to participate in the play activity (Bundy, 1992; Hindmarsh-Hook, 2005). Prellwitz and Skar (2007) evaluated the usability of playgrounds of children with varying levels of disabilities. As related to the concept of relative mastery in the model of occupational adaptation, usability was described as the child's perception of their efficiency, effectiveness, and satisfaction with the playground equipment. All children reported that playgrounds were a recognizable place, provided privacy, and provided challenges. However, depending on their ability to utilize the playground environment, children with different abilities differed in their perceptions of the playground to provide a chance to be with friends, the opportunity to participate in games or play scenarios, and to be supportive or hindering to their engagement in play. Children with physical

disabilities reported that the playground design at times inhibited them from using the playground and interacting with friends due to the inaccessibility of their assistive devices to reach the playground. Moreover, children with visual impairments suggested that the playground was located too far from the school building and lacked color contrast, which made moving about on the multi-leveled fort more difficult. For children with developmental delay, the playground posed challenges because it was difficult for them to move about the space efficiently or understand how to manage materials that required complex motor planning such as the ropes or jungle gym equipment. Children reported that they preferred structures that were familiar to them such as a play house or boat in which they could enact different play scenarios such as playing "school" or "restaurant" (Prellwitz & Skar, 2007). In a study performed by Yuill, et al. (2006), children with autism spectrum disorder were found to produce increased initiation in social play with peers when the playground featured structures that promoted imaginary play such as a train track embedded in the floor of the playground and when spatial density of children to each other was increased.

The physical environment of the pediatric hospital provides children with stark differences from other familiar environments such as home, school, or a neighborhood park. Rooms are often shared among patients and filled with foreign medical equipment. The hospitals also provide a plethora of sensory experiences that differ from home such as fluorescent lighting, loud noises from alarms and monitors, and potent smells. Often due to infection control, toys that provide calming tactile information such as favorite

stuffed animals or blankets form home are restricted. Fleming and Randle (2006) found that every type of toy selected in their investigation of common hospital toys in the pediatric intensive care unit carried some form of bacteria or fungi. They suggested limiting the number of toys that could not be properly sanitized. This recommendation reduces children's opportunities to play with familiar toys that may help them better cope with the multitude of stressors caused by the hospital environment.

The hospital environment frequently offers few designated areas for play to occur. In order for children to engage in play and exude playfulness, a space must be established that is recognized by children as a safe place where it is okay to play (Kielhofner, et. al, 1983; Skard & Bundy, 2008). Kielhofner, et al. (1983) suggested that the play environment must provide an optimal arousal for the children to be enticed to play. An environment that is overly arousing for children may propagate further anxiety and withdrawal, whereas as environment that is under-arousing, may result in decreased interaction from the children with the toys or others due to boredom (Kielhofner, et al., 1983). It is important for the Child Life therapist in collaboration with the occupational therapist to assess each child's temperament, previous history of play experiences, sensory processing skills and current medical condition, in order to gage the child's exposure to novel and over stimulating features of the playroom (Kielhofner, et al., 1983; Koeller, 2008a). For children who are subjected to prolonged hospitalization, there is a risk of children developing boredom or diversional activity deficit (Kielhofner, et al., 1983; Kuntz, et al., 1996). Children may become acclimated to the limited toys available

and become less interested in imaginary or symbolic play. In order to promote optimal playful behaviors among chronically hospitalized children, it is vital to provide toys and games that are appropriate for the child's cognitive and development level (Kuntz, et al., 1996). Making the toys accessible to children is crucial in order to increase the child's engagement and use of the toys (Kielhofner, 1983; Prellwitz & Skar, 20007). Toy selection is an important factor in creating a playroom that is enticing for children to initiate and sustain play. Gender specific and gender-neutral toys can stimulate symbolic and imaginary play among preschoolers (Stagnitti, 1997). Landreth (2002) suggests that playrooms contain a variety of toys that allow children many opportunities for emotional and creative expression. Toys should be representative from the following categories: real-life toys, medical toys, creative and artistic materials, and aggressive toys (Landreth, 2002).

Evaluation of the toys within a hospital playroom is a very important factor in developing an inviting, designated play space for children. However, the physical design of the hospital playroom is also another essential aspect in creating a playful environment. Few studies have investigated the physical features of the hospital playrooms. In a descriptive study by Haiat, et al. (2003), the playrooms within the Schneider Children's Medical Center in Israel were described and case study of a pediatric patient's play was performed. The hospital created two separate play areas for children that restrict any medical or painful procedures from being performed. The white room is a fantasy-like room with calming white matrices on the walls, and an underwater

world light show that pops up on the wall. A calming waterbed is inside the room with a revolving light that projects images across the walls. A bubble machine produces soft sounds and different colored and shaped bubbles. The children can adjust the temperature of the waterbed and also the color of the lights. The Starlight Hall has a multi-media center with computers, video games, and other media that children can connect to their friends in the "healthy world." Another part of the room has a place for artistic expression and dramatic representation. In one case study of a child with severe burns, after the child was in the white room each day before treatment, the nurses reported that she was much less resistant to her burn care procedures and even took initiative to do some of her care herself. Using teleconferencing, videoconferencing, and email allow children to participate in classroom activities, keep connected with their classmates, and give them continuity for their daily routines. The authors urged nursing staff and other health-care providers working with hospitalized children to use play frequently especially during daily routines in preparation for surgery or invasive procedures and during painful or unpleasant procedures.

Though children in most pediatric hospitals have the opportunity to visit the playroom or attend Child Life therapy events, children spend most of their day in their hospital rooms or other rooms for medical procedures. Very little literature exists regarding why pediatric hospitals are designed the way they are (S. L. Eisen, personal communication, March 24, 2009). In a study designed to inquire art preferences of hospitalized children compared to non-hospitalized children, children of all

developmental ages based on Piaget's levels of cognitive development were found to have preferences for representational art versus abstract art (Eisen, et al., 2008). Significant gender differences were found for art preferences with adolescent non-hospitalized males ages 14 to 17 preferring representational art more so than females. No significant differences in art preference were found based on gender among hospital children of all ages. In contrast to the hypothesis that children who viewed nature art would display improved performance on psychophysiological measures including blood pressure, pulse, and the Peds QL Present Functioning Visual Analogue Scales scores (Peds QL^{TM}VAS), no significant difference was found following art exposure compared to pre-exposure measures. Eisen, et al. (2008) suggested the time frame between measurements may have been too long. Additionally, children may respond better to direct exposure to art such as manipulating a kaleidoscope or observing more active visual distractions. Despite the fact that exposure to art did not create an immediate positive effect on hospitalized children, this randomized quasi-experimental study revealed that children have preferences of artwork. Moreover, the children and adolescents appear to prefer nature, representational scenes, which perhaps, provide a sense of familiarity in a foreign physical hospital environment.

The study performed by Eisen, et al., (2008) utilized a quantitative design to evaluate how the physical environment affected stress levels in children, but very few studies have evaluated the physical design features of pediatric hospitals (Eisen, personal communication, March 24, 2009). In response to the lack of evidence-based design for

health care facilities, the American Academy of Healthcare Interior Designers (AAHID) was established in 2005. The organization provides a certification program for interior designers for health care facilities. The website of the organization houses a collection of evidence-based articles and editorials regarding hospital, long-term care facilities, and clinic designs (http://www.aahid.org, Retrieved March 27, 2009). Yet out of these articles, no specific studies investigated why pediatric hospitals were designed the way they were and how the physical environment of pediatric hospitals affects the health and well being of hospitalized children (http://www.aahid.org/articles/ , Retrieved March 27, 2009).

Social Environment

The pediatric hospital environment exposes children to a different social environment than their typical childhood environment. Children are often separated from close family and friends they are familiar with and thrust into an environment where they must interact with other persons such as the staff, other patients and their family, and visitors. Children must read and interpret cues from others to know how they may interact with others and what their roles are within this new environment. One of the most important factors influencing a child's adjustment to the social environment of the hospital is the involvement or presence of the child's primary caretaker (Abbot, 1990; Shannon, 1984; Shields, 2001). When a child feels securely attached to caregivers and are assured that the caregiver will be near if needed, then children tend to express themselves and explore their environment more readily (Greenspan, 2002). Often, however,

hospitals only permit one caregiver or parent to stay with the child overnight or limit the numbers of hours that a caregiver can visit. Parents and caregivers display increased levels of anxiety when they have less information about upcoming procedures and less opportunity to participate in decisions (Shields, 2001). Similarly hospitalized children who are given few opportunities to actively make decisions about their care have less than optimal autonomy (Runeson, et al., 2002).

Very few studies have evaluated how children socially interact with other children in the hospital. Pass and Bolig (1993) found that only 29% of hospitalized children participated in group play. Kielhofner, et al. (1983) and Gariepy & Howe (2003) similarly found that group play was diminished amongst hospitalized children. Both studies revealed that hospitalized children exhibited decreased levels of group play compared to non-hospitalized children. Morgan (2010) evaluated perceptions on health care providers, children and pediatric hospital administrators on single versus double occupancy rooms. Though recent trends in pediatric hospitalization redesign have promoted single occupancy room for infection control and privacy purposes, there is a belief that single occupancy rooms may cause increased isolation amongst hospitalized children. When surveyed the children stated that double rooms offered a peer to talk to, the opportunity to stay more connected with what was occurring in the hospital, the chance to develop friendships, a more fun atmosphere, and less of a chance to feel lonely. In contrast, having a single occupancy room provided more privacy, more choice in selecting television, the opportunity to have both parents stay, and more privacy

according to the children. Since pediatric hospitalization involves exposure of the child to other hospitalized children, hospital staff, and visitors more studies are needed to examine the phenomenon of how the social environment of the pediatric hospital affects play and playfulness among hospitalized children.

Cultural Environment

According to the model of occupational adaptation, cultural subsystem is the culmination of the physical and social system to facilitate the occupational environment (Schkade & Schultz, 1992). The cultural subsystem is comprised of the "procedures, methods, rituals, values, and constraints of the work, play, leisure, and self-maintenance contexts" (Schkade & Schultz, 1992, p. 831). Within a pediatric hospital setting, numerous cultures collide. Not only does each child bring his own religious beliefs, values, morals, and rituals from his own culture, but also each child is exposed to different cultural beliefs and practices from the other children in the hospital environment. Additionally, the hospital setting produces its own culture. There are rules and regulations such as visiting hours for families and guests or designated quiet time for naps. Each child has a designated schedule for waking up, bathing, dressing, attending therapy, and having medical procedures performed. The hospital staff has its own culture as well. Each health care discipline may wear different uniforms, work different hours, and use different terminology. Belief systems about the role of health care professionals also influence the cultural subsystem of the hospital environment. For example, some families have a high degree of esteem regarding the doctor and health care professionals

and are rigorous about implementing suggestions they are given. Other families may be skeptical of the health care profession and may be more hesitant to accept advice or implement suggestions given by the health care professionals. Often children are not given the opportunity to be a part of the decision making process regarding their health care despite their ability to do so (Lindeke, et al., 2006; Runeson, et. al, 2002).

Environmental Assessments

Numerous play theorists have even developed play assessments that specifically assess how the child interacts with objects in the environment (Knox, 1974; Skard & Bundy, 2008; Takata, 1974). In the Revised Knox Preschool Play Scale, Knox (2008) created two categories, materials management and space management, to assess how a child manipulates and explores objects within the environment and to evaluate how the child moves about and makes use of the physical space within the environment. The Play History (Behnke, & Fetkovich, 1984; Takata, 1974) involves a parent interview of the child's daily routines and previous play skills, which leads to more in depth discussion of how the child plays within his typical environment (Brynze, 2008; Takata, 1974). Bundy (1999) suggested that the environment greatly influenced the degree of playfulness a child exuded. The Test of Environmental Supportiveness (Bundy, 1999; Skard & Bundy, 2008) was designed as a clinical tool, to be administered in collaboration with the ToP to assess if the environment supports or hinders play.

The Test of Environmental Supportiveness (TOES), (Bundy, 1999; Skard & Bundy 2008) is a tool used to evaluate if the environment is facilitating or inhibiting

playfulness. This assessment is given only in conjunction with the ToP. The TOES contains 17 items that evaluate caregiver interaction, peer playmate interaction, older/younger playmate interaction, physical space and sensory features of the environment. Each item has contradicting statements on either side of a 4 pt. ordinal scale. Positive numbers indicate that the environment is supporting play, negative numbers indicate that the environment is inhibiting it. This assessment requires the observer to identify the player, caregiver, peer playmates, and older or younger playmates. The observer must also determine apparent sources of motivation for the child upon initiation of the assessment. This assessment is designed to provide information regarding the environment for consultation between the parent/guardian and the therapist. (Bronson & Bundy, 2001)

The above-mentioned assessments were designed by play theorists who purported that the environment significantly influences a child's ability to play and exude playfulness. Though these assessments have been utilized in studies of play or playfulness, none have been utilized to assess the pediatric hospital environment, with the exception of the Preschool Play Scale in the study by Kielhofner et al. (1983). There is a lack of research regarding why pediatric hospitals are designed the way they are. A hospital environment is a place to foster health, well-being, and reduce the effects of disease and illness. A pediatric hospital environment should facilitate wellness by reducing anxiety, self-blame, and fear of children by providing a calming environment that avails the opportunity to play and to engage with family and friends.

Occupational therapists are aware of the vital importance of play and playfulness among children. According to the American Occupational Therapy Association's societal statement on play, "The absence of childhood play or reduced opportunities for it deprives children of an essential context for their optimal development and learning" (AOTA, 2008b, p. 707). Furthermore, occupational therapists have a responsibility to adapt play materials, objects, and environments to facilitate optimal play experiences and advocate for safe, inclusive play environments that are accessible to all" (AOTA, 2008b, p. 707). There will always be a need for pediatric hospitalization. Therefore, it is necessary to evaluate how the pediatric hospital environment influences children's opportunities to participate in the vital childhood occupation of play. Additionally, assessing how the hospital environment facilitates or hinders playfulness will elucidate knowledge of children's adaptiveness in response to hospitalization.

CHAPTER III

STUDY 1

How do Play and Playfulness Occur among Hospitalized Children: A Qualitative Analysis

Purpose

Though several studies have evaluated therapeutic play and its effect on reducing anxiety and boredom as well as increasing psychological well being and development, few studies have investigated children during free play while hospitalized. Koller (2008a) suggests that more studies need to be performed to evaluate how play occurs among hospitalized children. The purpose of this study was to evaluate how children play and exude playfulness in the hospital. This study was designed to answer the question "How do play and playfulness occur among hospitalized children?"

Methods

Design

In order to evaluate how children play in a hospital setting, an ethnographic qualitative design was conducted. An ethnographic design enables the researcher to evaluate how individuals perform everyday activities within environmental contexts

(Patton, 2002). In this particular study, the principal investigator observed how children played or did not play in the hospital environment. This involved describing the ways in which children interacted with toys and objects within the play environments of the hospital. In order to maintain consistency with the open-nature of qualitative methodology, video recordings of the participants were taken while the children engaged in unstructured free play throughout their hospitalization period.

Participants

Participants included three children admitted to the inpatient feeding program at a pediatric rehabilitation hospital in a large Southwestern city. The inpatient feeding program admits children three to five children for usually a three to four week time frame. This ethnographic study involved observing each child within a single feeding group admission as a cohort group. Two of the three participants were admitted in the same week, and the third participant was admitted a week later and stayed two weeks longer. By analyzing the three participants as a cohort group, the researcher was able to observe how each child played under similar conditions such as encountering the same hospital staff, being exposed to similar toys, and being admitted during the same season of the year.

Parents who agreed to have their children participate signed the informed consent form. All children in the qualitative study were under the age of seven, and therefore no assent forms were obtained. The three children were selected by convenience sampling based on their admission to the inpatient feeding program during the time the study was

initiated. The children were selected to the inpatient feeding program based on level of need and preparedness from outpatient therapy. Though efforts were made to track ethnic, cultural, gender, and age differences, sampling was performed from the population of children selected for the inpatient feeding program. Children selected to the inpatient feeding program must have a primary diagnosis of feeding disorder, although they may also be diagnosed with other physical, developmental, or cognitive disabilities. Inclusion criteria required that the child be within 1 to 10 years of age, be diagnosed with feeding disorder, have received an Outpatient Feeding Assessment (OFA) or Infant Feeding Evaluation (IFE) or have had been referred to the feeding program by a relevant discipline, and be a candidate within the inpatient feeding program. Exclusion criteria included any child who was over the age of 10 years, any child who was in child protective services, and any child whose parents or legal guardians who did not consent to their child being part of the study.

Setting

Video footage was taken in three designated play spaces including the inpatient feeding wing play area, the Child Life playroom and the outdoor playground. The play area of the inpatient wing is an area designed for free play and is equipped with toys, a television, and a child-sized table. Because the purpose of this study is to investigate how children play and exude playfulness during their unstructured time in the hospital, video footage was not originally designed to be taken in the playroom areas. However, once the study commenced, all of the participants frequently wandered into the Child Life

playroom, which was connected to the play area by an open hallway. Since the nature of this study was to evaluate the natural play experiences of the children while in the hospital, the research assistant did not interfere with the participants wandering into other play spaces, but rather just followed the children playing in either the play area or Child Life play room during the video observation sessions. The outside playground is only accessible if an adult is accompanying a child. These areas are the primary settings designated for play within the hospital setting and were selected in order to develop a more complete awareness of how play and playfulness occur in the hospital environment across settings.

Instrumentation

Outpatient Feeding Assessment (OFA), Infant Feeding Evaluation (IFE) or Admitting Evaluation Paperwork. Each child's demographic information was obtained from the outpatient feeding assessment evaluation (OFA), infant feeding evaluation (IFE) or admitting evaluation paperwork. The majority of the children who enter the feeding program receive an OFA or IFE by a multidisciplinary team depending on the child's age. The report includes personal data, medical history, feeding history, sensory processing, developmental skills, and parent concerns. In consenting to the study, each participant's parents agreed to allow the child's information to be retrieved by making a Xerox copy of the child's original OFA, IFE, or admitting evaluating paperwork. All identifying information was eliminated to comply with HIPPA regulations and protect

confidential information of the patients. Participants were given pseudonyms to protect confidentiality.

Qualitative Play Observation Form. The essence of this study involved observing children as they engaged in free play across various environments in the hospital. Based on literature findings, a qualitative observation guide was developed to include four domains: physical, social, toys, and pleasure. The qualitative observation form was designed to reduce researcher bias and allow the researcher to be open to various play behaviors that occurred. This qualitative data form was used to categorize the written comments from the field notes. See Appendix A for an example of the qualitative data form.

Data Collection Procedure

Prior to the data collection, the three inter-related studies were submitted for IRB approval from the hospital IRB committee, followed by submission to the Texas Woman's University IRB committee. Approval from the pediatric rehabilitation hospital was granted in August 2009, and approval from Texas Woman's University was granted in December 2009.

After parents completed required forms and consents, copies of the participants' OFAs, IFEs, or admitting evaluation paperwork were made and filed in a participant notebook. Upon admission to the hospital, each participant was videotaped for three, 15-minute segments within the above-mentioned play environments every week from their admission to discharge. Since the primary researcher was living in a different city from

where the studies were taking place, the research assistant was responsible for meeting with all the families, obtaining consent, collecting admitting paperwork, videotaping all play sessions, and compiling video footage on separate DVDs for each participant. The research assistant recorded each play session with a hand-held camcorder and was therefore able to adjust the angle of the camera to capture the participants' actions and sounds as they moved about the designated play spaces.

The qualitative video footage was collected over a six-week period in order to encompass the total hospitalization period from admission to discharge of the three participants. Fifteen-minute observations were made at different times of the day and different days of the week including at least one weekend observation per week (See Table 1). Once all the data recordings were taken the research assistant compiled the video footage on separate DVDs for each participant so that the principal investigator could begin watching the videos. The principal investigator took notes while watching the videos. Immediately following the watching of the videos and the note-taking the principal investigator completed a qualitative play observation form.

Table 1

Qualitative Data Collection

Participant	Week 1	Week 2	Week 3	Week 4	Total Observations
Aiden	Sat. E	Fri. M	Fri. A	NA	8
	Sun. A	Tues. E	Sat. M		
	Tues. M	Thurs. M			
Janelle	Sat. E	Tues. M	Thurs. A	NA	9
	Sun. E	Thurs. E	Fri. A		
	Mon. A	Fri. M	Mon. A		
Mateo	Wed. E	Fri. A	Thurs. M	Sat. M	12
	Fri. M	Mon. A	Tues. A	Wed. E	
	Mon. E	Tues. A	Fri. A	Fri. M	

Note. M= Morning, A= Afternoon, E= Evening. Aiden and Janelle discharged from the inpatient feeding program during their third week and therefore do not have play videos from the fourth week.

Data Analysis

Demographic information was compiled and all confidential information was concealed by assigning pseudonyms for each participant, Aiden, Janelle, and Mateo, respectively. In order to reduce bias, demographic information such as age, diagnosis, or history of hospitalizations was reviewed until after themes were developed. Certain diagnoses are associated with variations in play skills and abilities, and therefore, the principal investigator opted to analyze the video footage before learning of diagnoses that might have influenced the participants' play (See Table 2).

Table 2

Study One Demographic Information

Participant	Age	Gender	Race/Ethnicity	Additional Diagnoses
Aiden	2 yrs	Male	Caucasian	coarcion of the aorta, pulmonary hypertension, developmental delay, apraxia
Janelle	2 yrs	Female	African American	patent ductus arteriosus, congenital missing of a kidney, GERD, webbing of toes, missing of UE digits bilaterally
Mateo	5 yrs	Male	Hispanic	Type I diabetes, autism

In order to promote investigator triangulation, peer reviewers assisted the principal investigator in analyzing the qualitative videos. One qualitative peer reviewer is an occupational therapist who specialized in qualitative research and who was a member of the dissertation committee for this study. Another peer reviewer specialized in pediatric occupational therapy and performed qualitative research for her dissertation studies from TWU in 2007. The third peer reviewer was the research assistant who was a master's level occupational therapy student at TWU. These peer reviewers were selected to provide differing perspectives in attempt to reduce investigator bias.

The principal investigator began analysis by performing microanalysis of each qualitative form that was completed by herself, the research assistant, and the two qualitative investigators for each participant. The comments from microanalyses were

compiled into a list for the physical environment, physical behavior, social, toys, and pleasure categories for each week of admission per participant. These comments were evaluated to derive "weekly themes" for each participant. From these weekly themes, overall themes were developed for each participant. Ultimately, these themes were combined to establish overall grand themes. After thematic analysis was completed, the principal investigator enacted another triangulation method by re-analyzing each child's notes and qualitative data forms from the diagnostic perspective to evaluate if any play behaviors were associated with diagnostic features.

Investigator triangulation enhances credibility of qualitative studies by bringing a variety of perspectives and biases to the study and thus reducing the possibility of biased reporting (Patton, 2002). In order to ensure trustworthiness and credibility of the study, various triangulation methods were employed. Multiple data points, multiple methods and multiple investigators were utilized to establish triangulation. A total of 29 qualitative videos were viewed of the three participants. The participants were observed multiple times during the week and at different times and days of the week including weekends (See Table 1). By observing each participant at different times of the day and the week, the principal investigator was able to observe a wider sample of play behaviors. The principal investigator recorded notes while observing the videos of the participants during free play prior to completing the qualitative observation play forms. These field notes provided etic information about how the investigator classified behaviors while observing free play.

A dissertation committee member, who specializes in qualitative research, watched four randomly selected videos of the participants and completed the qualitative observation play form. A former TWU occupational therapy PhD graduate who specializes in pediatrics and qualitative research served as the other expert qualitative reviewer. She watched the same four randomly selected videos watched by the first qualitative reviewer. She also watched three additional videos of each participant and then completed qualitative observation forms. The research assistant analyzed one video clip of Janelle and completed a qualitative observation form. All of these forms were similarly analyzed in the same fashion as the qualitative observation forms that the principal investigator analyzed. The themes from the other reviewers were subjected to the thematic analysis process listed above.

Results

A total of 29 videos of the three participants were collected. The principal investigator analyzed all 29 videos using the described protocol. Additionally, qualitative reviewer one analyzed three videos, qualitative researcher two analyzed 12 videos, and qualitative reviewer three analyzed one video. Therefore, a total of 43 qualitative play observation forms were analyzed. All forms from the principal investigator and other qualitative reviewers. Both the principal investigator and qualitative reviewer two tended to have very similar notes and observations taken. The qualitative observation forms completed from qualitative reviewers one and three were similar but just not as detailed as those observation forms reviewed by the principal investigator and qualitative

reviewer two. There were no outlying behaviors that were mentioned on any of the forms. Multiple patterns or themes emerged for each participant. From the individual themes, overall grand themes were established. The most salient themes for each qualitative category (physical environment, physical behavior, social, toys, and pleasure) are described below and can be viewed in Table 3.

Table 3

Overall Grand Themes

Category	Themes
Physical Environment	Open Space Facilitates Physical Play
	Toys and Equipment Are Often Not Accessible
	Furniture and People Serve as Play Surfaces or Obstacles
	Play Space Expands Over Time
Physical Behaviors	Gross Motor Play
	Fine Motor Activity Depends on Skill Level of the Child
	Sensory Seeking Behaviors
	Wandering Around
	Challenging Behaviors Evolve over Time
	Repetition of Actions
Social	Parents or Caregivers Support Play
	Cooperative Play Emerges over Time
	Sharing of Families
	Play Emerges Without Structured Support
Toys	Type of Toys/Equipment Present Foster Different Types of Play
	Interest in Fine Motor Toys Dependent on Interest and Skill Level
	Objects and Toys Used Differently than Intended Purpose
	Missing Toys from Home
	Hospital Equipment and Staff Become Part of the Play Scene
Pleasure	Enjoyment of Gross Motor Play
	Repetition of Play Activities
	Social Play with Caregivers Is Fun
	Watching Others
	It's Fun to Add Challenge

Physical Environment Themes

Open Space Facilitates Physical Play. The tile floors, wide hallways, and large surface area of the playroom and playground facilitated all three participants to engage in gross motor play. Children were able to crawl, lie down in prone position, and propel child-sized cars down the hallway. Even when many other people were present in the designated play areas, most often the participants were able to maneuver around obstacles or find an individual play space if so desired. Contrastingly, when the participants were observed playing in their hospital rooms, they seemed to encounter more obstacles from the hospital bed, dressers, dividing curtains, and small space. These physical features of the hospital room resulted in play becoming more localized to a specific area such as performing fine motor play while leaning over the surface of the bed.

Toys and Equipment Are Often Not Accessible. In the play area adjacent to all of the inpatient feeding program participants' rooms, were placed two tall, plastic laundry hampers with flip-top lids that held toys. Two of the three participants were not tall enough to open the lid and reach inside for toys. Aiden required assistance from his father to obtain toys. Janelle was more adaptive and found ways to knock over the hamper in order to get the toys out independently if her caregiver was not nearby. The Child Life playroom housed significantly more toys and art supplies; however, these items were locked in cabinets the majority of the time. During unstructured and structured hours, the toys were available, which did foster more play exploration of the participants. There were numerous occasions throughout the hospitalizations where all three participants

attempted to open cabinets that were locked. Less imaginary and constructive play was observed when the Child Life playroom cabinets were locked. Additionally, the outside playground yielded access problems as well. The playground consisted of several stationary pieces of equipment that fostered gross motor and imaginary play. However, some of the equipment was too tall for participants one and two to climb on without assistance from an adult. Only Mateo, participant three, was tall enough and skilled enough to climb on this equipment and ride it without assistance. Similarly, participants one and two needed assistance to climb up on the bouncy platform. The teeter-totter was a favorite toy among all three participants, but it required another playmate to ride the other side or a caregiver to assist getting on and then pushing down the other side. During her discharge outside video, Janelle tried to get on the aforementioned pieces of equipment, but was unable to because there was no adult other than the research assistant, who was a non-participant observer, to help her ride these toys.

Play Space Expands over Time. During the early admission videos, most of the play sessions occurred in the play area adjacent to the feeding program bedrooms. As the participants became more familiar with the hospital environment, the play space expanded to encompass the entire northern wing of the first floor including the nurses' station area. The participants initiated the expansion of their play beyond the hallway doors into the main east-west hallway of the hospital and into the southern wing of the first floor. The Child Life playroom encompasses the majority of the space of the southern first floor wing. Especially when the doors were open, all three participants

tended to run outside of the play area towards the Child Life playroom. Additionally, as they got closer to discharge, the participants were observed to utilize their individual hospital bedrooms as part of their space. At times instead of just using their own bedroom, they entered other patient's rooms.

Furniture and People Serve as Play Surfaces or Play Obstacles. The participants were often observed to create play activities by utilizing the adult and child-sized furniture as a play space. The couch, for example, was used for multiple purposes. Aiden used the couch as a climbing surface and as a hiding place for a hide and go-seek game with his dad. Janelle often used the couch as a climbing surface, a writing surface for her magnadoodle, and a space for her and Janelle to sit and play cooperatively with a toy. Mateo often used the couch and the end tables as obstacles in which he created a circular path to drive his big-wheel around. Mateo was less interested in social play with other children, but often times used other children or adults as obstacles to drive around. At times his mother had to provide verbal and physical cueing to ensure the safety of the other children since he had decreased awareness of their balance ability.

Physical Behavior Themes

Gross Motor Play. All three participants were observed to participate in some form of gross motor every play session. Commonly the children were observed to walk around, crawl, climb on furniture or playground equipment, push or pull toys. The skill level of gross motor ability varied among participants. Aiden was perhaps the least skilled at performing gross motor activities; he often needed assistance from his

caregivers to perform gross motor activities especially near the time of his admission. Janelle was very skilled at gross motor skills. She appeared to have good body awareness and was able to exude enough balance to dance, wave her arms in the air and sway to music. She initiated climbing and balancing activities that were then imitated by participants one and three. Mateo often preferred gross motor activity especially at the beginning of his hospitalization. He was frequently observed to ride a big wheel, run back and forth among the playground equipment, walk, and balance on chairs.

Fine Motor Activity Depends on Skill Level of Child. Two of the three participants were noted to participate in fine motor activity frequently during their hospitalization stay. Janelle, despite missing two digits on her right hand, was very skilled at performing fine motor activities. She spent a significant amount of time scribbling designs on her magnadoodle. She also operated small buttons on musical toys independently. Mateo was able to perform activities that required isolated finger movements such as playing an adult-sized keyboard, manipulating board game pieces, putting together small knobbed puzzles, and moving small figurines. Aiden was less likely to partake in fine motor activity. He often preferred to engage in more sensorimotor or gross motor play. When his father attempted to place puzzles or coloring materials in front of him, he removed puzzle pieces briefly, but then quickly became distracted and rarely completed constructive fine motor play to put the pieces together.

Sensory Seeking Behaviors. All three participants were frequently observed to display some type of sensory seeking behaviors. All participants appeared to enjoy

vestibular activities such as riding in the wagon, sliding down the slide, and crawling through the playground equipment. The participants often engaged in activities that offered proprioceptive input such as climbing on furniture, pushing the wagon or push cars, propelling themselves on cars with their feet, banging toys on various surfaces, or crashing and burying themselves into the bean bag chairs. Aiden was noted to perform significant oral-seeking behaviors. He frequently chewed or mouthed on toys or hospital items such as a plastic plate, an empty medicine bottle, or his fingers. At times his oral seeking behaviors distracted him from other play activities. Because he commonly held the item he was chewing or mouthing with one hand, he was unable to participate in other play activities requiring both hands. Mateo more frequently displayed vestibular and proprioceptive behaviors. At times, he frequently shook his head or flapped his arms. He often sought out intense vestibular and proprioceptive activities such as zooming the big wheel down the hall, banging items on various surfaces, and moving himself in circles or pivoting himself on the floor. These sensory seeking behaviors appeared to be either the objective of the participants' play activities or an indirect benefit of other play activities.

Wandering Around. All three participants were noted to participate in aimless wandering. Though this since of wandering was present throughout the hospitalization for Aiden, it seemed to be most prevalent during the last week of hospitalization. In a video during his discharge week, Aiden was observed to move around his bedroom with a sense of bewilderment on his face. He walked around the bed several times, opened a few drawers from the dressers, and looked around the room. He appeared to be either bored or

confused. The environment was noticeably different by this final day. Instead of his own cartoon comforter on the bed and extra toys and stuffed animals brought from home, the room was rather bare and a suitcase was placed on the bed. Janelle's wandering was most obvious during her discharge outside playground observation. She attempted to get on several pieces of equipment but was unable to without the assistance of an adult or another child. As a result, she walked slowly around the playground; sometimes she just sat on the caboose bench and looked into space. She attempted to join other children, but some of the children had to leave promptly for outpatient appointments, or other children gave cues she was not invited to play. This inability to socially engage with other children seemed to increase her wandering behaviors. She looked into the video camera with a sad, lonely facial expression. Similarly, Mateo exhibited different activity levels during his play and some occasions of wandering. In the early stages of his hospitalization, he exuded a very high activity and intensity level. He frequently moved from activity to activity, but he seemed to be doing so because he enjoyed the sensory information that running and quickly changing activities brought. By his discharge week, it was noted that he stayed more localized in his play area. He was even noted to put his head down a few times while playing. On the outside playground, he performed slower-paced walking in circles. At times he pretended that he was following the embedded train or colored swirls on the playground surface. However, other times he seemed to just walk around, look up at the sky and sometimes peer through the windows into the outpatient waiting room.

Challenging Motor Behaviors Evolve over Time. All three participants were observed to engage in more challenging motor behaviors as their hospitalization progressed. Aiden originally needed his father's help to transition between movements or climb onto some of the furniture. He frequently observed Janelle climb on and off of the couch, climb into the wagon, and stand on chairs. By his second and third week, Aiden was attempting these more challenging behaviors. He began trying to climb into the wagon, pull out child-sized chairs and sit on them away from the table, propel the child-sized car backwards, ascend stairs with only one hand-held assist and climb up the slide with his father's help. By the last week, he was very exploratory with new motor movements. He ran and stood on the scale by himself and he tried to climb into the wagon when it was not stabilized by a wall or another person. Instead of encouraging his son to try novel motor tasks, Aiden's father seemed to provide more assistance for ensuring safety due to Aiden's more daring behaviors.

Janelle was very active from the beginning of her hospitalization. She was observed to walk, run, dance, climb up stairs, lean on furniture, and crawl. By week two, her activity level increased. She was performing the same actions she did in the first week but was now adding a greater amount of challenge. For example, she started climbing and standing on child-sized chairs, climbing into the wagon, and crashing herself into bean bag chairs. By her third week she was able to climb up the slide by herself and began imitating or following instructions for dance moves given by Aiden's father. She was

able to move around the room pretending to be various animals and create new dance moves in response to the music.

Mateo also performed more challenging motor behaviors over time. During his initial week of hospitalization, he had two Pedi-wraps, or removable arm splints, placed on bilateral arms. These splints were most likely applied to restrain him from pulling out his naso-gastric tube. The tube was taped to the side of his face, laced around his ear and taped to the back of his shirt. By placing the Pedi-wraps, on both arms he was unable to flex his elbows, which limited him from performing several motor tasks. He was able to perform distal motor tasks such as manipulating puzzle pieces or flipping through books. To add challenge, he attempted to balance on one foot while standing on the solid floor. By the second week, the Pediwraps were no longer applied, and he was noted to ride the big wheel up and down the hallway. As time passed, he began devising more complex obstacles on his "driving" course. He used furniture and people to serve as objects. He began standing up on chairs and performing frequent position transitions from lying on the floor in prone on elbows position, to creeping around, to walking on tip-toes in a very short amount of time.

Repetition of Actions. All three participants were noted to repeat the same action or play routine several times within each play session or over the course of the hospitalization. Aiden was noted to manipulate some of the same musical or light-up sensorimotor toys repeatedly. He seemed to enjoy listening to the sounds and seeing the lights in response to his actions. He was also frequently noted to try to push or pull the

wagon, especially if Janelle was around. Aiden also exhibited joy when he engaged in peek-a-boo or hide and go seek with his father and repeated these games on multiple occasions. Though he was never observed to initiate this game, he responded appropriately when his father started the game. Outside on the playground, he tended to prefer going up and down the slide most frequently. Janelle was most frequently observed to repeat fine motor and constructive activities such as drawing on her magnadoodle and pretending to prepare and serve food to people. She also was intrigued by the wagon and frequently crawled inside and requested rides. Like Aiden, she tended to repeat some of the same actions on the outdoor playground. She most commonly climbed up the stairs and slid down the slide. Though she repeated activities she enjoyed, Janelle did display more novelty in varying the activities she wanted to participate in and was able to do this on her own, unlike the other two participants.

Mateo was most frequently observed to repeat the same actions and phrases. He was frequently observed to recite lines from movies or television shows in echolalic-like speech. For example, he would frequently say, "Beep, beep" or "Choo, choo" when playing with cars or running on the embedded tracks on the playground. He often said, "Fire exit to the right, go down 13 steps," while he was playing with the figurines in the Child Life playroom, which had a fire exit sign above. He seemed to enjoy reciting the introduction line of the Pixar productions movies. At one point he even recited this while spelling the word "Pixar" with puzzle pieces. Additionally Mateo repeated similar motor actions throughout the hospitalization. He frequently enjoyed riding the big wheel. He

played with puzzles and operated simple switches on sensorimotor toys. Once he found the chipmunk figurines, he became enthralled with repeating the same scenario each time. He would place the chipmunks on some kind of a transportation device (either the big wheel or a stool) and push them around, and then he would have them slide down the wire and bead toy or the chair leg pretending that they were exiting the fire. He was also noted to perform more self-stimulatory behaviors such as flapping his arms, visually staring intensively at the planes above or at the fish tank, shaking his head back and forth, or flapping his hands.

All three participants were noted to repeat words or actions that were frequently mentioned or performed during feeding therapy sessions. Aiden was noted to pretend to feed his dad bites of food from the spoon. He presented the spoon to his father in the same manner the feeding therapists or technicians presented the spoon to him during feeding sessions. When his father pretended to take a bite, Aiden smiled and offered vocalization as if to praise his father for taking his bite. Janelle appeared joyful when preparing and serving pretend food to others. Oftentimes in the feeding program, the feeding therapists will prepare and weigh the food prior to the meal with the child present. Janelle may have been imitating some of the actions such as stirring, pouring, and wiping the cabinet like the feeding therapists may have done. Mateo also on occasion pretended to prepare food in the kitchen. During a session in his third week, he instructed his mom what food and kitchen items to draw on the magnadoodle. He often repeated common phrases other medical staff and feeding therapists said throughout the observed

play sessions such as "Are you ready? Let's go," or "We'll play later, it's time to go." These lines were frequently used by therapists prior to taking him to the feeding rooms for structured mealtime.

Social Themes

Parents or caregivers support play. This theme was perhaps the most dominant. In almost every play session, the presence of parents or caregivers or the lack there-of directly facilitated or inhibited the play of the three participants. Aiden's father was present during every play session observed. At the beginning of the hospitalization, he was very involved and initiated play with various toys. Aiden did not seem to know how to or have the interest in manipulating toys. His father pulled toys out of the hamper for him, demonstrated how to operate them, and initiated hide and go seek or peek-a-boo games. He was playful with Aiden and seemed to make the play environment more appealing to Aiden. Aiden's mother was also present during some of the sessions. Because she was in the late stages of pregnancy, she was unable to get on the floor or crawl around like Aiden's father was, but she did offer hugs, verbal praise, and removed obstacles to make it easier for him to play. Overtime, Aiden's father was able to step back and take a less active role in facilitating his play. He was still present in case Aiden needed assistance with a task or to pull the wagon. However, Aiden seemed to become more comfortable performing parallel or cooperative play with Janelle and did not need his father's help as intensively.

Janelle was the most autonomous player of the three qualitative participants. She was frequently able to explore the environment, find toys, and entertain herself. Her mother was present for most play sessions and her father was present for one session. Her mother allowed Janelle to guide the play scene and she stood back and only assisted if requested to or if she observed that Janelle needed help. She offered verbal praise when Janelle showed her the drawings she constructed on the magnadoodle. She pulled toys out of the hamper, fixed toys when Janelle played too roughly with them, and helped her get onto playground equipment such as the teeter totter, bouncy motorcycle, and bouncy platform. When Aiden's mother or another adult was not present especially on the playground, she displayed more aimless wandering. Aiden's father and to some extent Mateo's mother helped support the play of Janelle. She was very excited to interact, play hide and go seek, obtain wagon rides from, and show off dance moves to Aiden's father. Mateo's mother obtained a child-sized propel car for her to ride on during one play session.

Mateo's mother was crucial for promoting Mateo's play and playfulness. She was present for all but one play session. During most sessions, she selected toys that would provide Mateo some degree of challenge in order to maintain his interest. She purposefully selected more complex puzzles or detailed coloring sheets and thin markers for his use. She also brought toys from home that would interest him more than the younger-developmentally geared toys present. She gave him an adult-sized keyboard and encouraged him to play new songs. Likewise, she set up a board-Bingo game brought

from home for him and encouraged him to play. Similar to Aiden's father, she provided verbal or physical cues for safety, although more to protect other children from Mateo than for Mateo from injuring himself. Mateo's mother used open-ended questions and encouragement to help Mateo maintain interest in the play activity. She would often say, "All finished? Do you want to _____? She enforced appropriate rules to facilitate game play and told him that he must look at her and focus on the Bingo game if he wanted to keep playing. She helped facilitate gross motor play on the playground by suggesting pretend play themes such as driving the train or by pushing down the other end of the teeter totter if no other children were available. The one session when Mateo's mother was not present, Mateo demonstrated irritation, frustration, and loneliness. He screamed for her in both Spanish and English, pleading for her to come join him. He banged his magnadoodle against various surfaces and threw it on the floor. He sat and drew in attempts to entertain himself for a minute but then became preoccupied with his mother not being there and began to throw a temper tantrum again.

Cooperative play emerges over time. During the admission play sessions all three participants appeared much more interested in solitary play or social play with their parent, but not with other pediatric patients. However, over time the participants began engaging in more parallel and eventually even cooperative play especially with the other inpatient feeding participants. Aiden primarily observed Janelle playing once she admitted to the hospital and began occupying the play area when he was present. He was so entranced by another child playing, that he often became distracted from his play

activity and stopped to stare at her. Eventually and with the encouragement of his dad, he began performing more parallel play with her. He was observed to lean against the couch and play with sensorimotor toys while she drew on her magnadoodle. He was not skilled at communicating that he wanted to share toys or join her in the play. Instead, Janelle tended to dominate Aiden and took toys or claimed space without inviting him to play. However, as time elapsed, Janelle began to tolerate and even attempt to engage Aiden in play. She was able to find toys when he started using other toys she had abandoned. She would readily join Aiden and his father and soon began directing play. By the second week of admission, participants one and two were often found to play together cooperatively. They would climb through playground equipment, take turns sliding down the slide (with the assistance of parents), climb into the wagon and go for rides, and prepare pretend food together in the playroom. By week three they appeared to enjoy each other's company and the presence of each other's parents. In the final discharge videos, they both appeared somewhat sad and seemed to be looking for each other.

Mateo displayed very little interest playing with other children, especially during the early admission videos. On the playground he appeared to be oblivious to other children playing. He would run up the stairs and squeeze his way through other children playing at the top of the fort to slide down the slide. At one point he even knocked over a younger inpatient. His mother demanded that he apologize, which he was able to imitate, but he showed little interest or concern for others. As time went on he began displaying slightly more eye contact with other health care professionals. He smiled at the

pediatrician when she was measuring his heart rate with her stethoscope. He even initiated a conversation and said, "Hello nurse." She said hello and asked him what he was doing. He enthusiastically asserted, "I'm riding a bicycle!" During the third week of his admission, another male patient similar to his age was trying to cooperatively play with the figurines with him. Mateo's mother encouraged him to trade toys. He obliged and got on the child-sized cars and let the other boy play briefly. Though this sharing only lasted a few minutes, when he returned to the boy, he told the boy he could ride the car and that Mateo would play with the chipmunks. Even though he was not very skilled at playing together with the boy, he at least acknowledged that if he was taking a toy from the boy, he needed to provide an alternative for him to use. Mateo also showed an increase in cooperative play with his mother. In his admission play sessions, he often would give her commands to say without allowing her an opportunity to converse. By the final week, he exhibited better cooperative play skills, such as allowing his mother to take a turn during the Bingo game and collaboratively suggesting items for each other to draw on the magnadoodle. He even pretended to read a book to both his mother and a younger patient during the same session.

Sharing of families. This theme was one of the most fascinating themes to emerge. Aiden and Janelle were admitted within a few days of each other, and Mateo was admitted a week and a half later. All of the families seemed to have bonded over the course of the hospitalization. In the background of videos, parents would talk with each other while their children played. Particularly with participants one and two, a special

bonding seemed to occur not only between the parents and between the two participants, but also between the participant and the other participant's parents. It was almost as if there was an exchange or sharing of caregivers. For example, Aiden's dad was very supportive of facilitating the play of Janelle. He helped her get on playground equipment if he was closer than her parents or if they were absent. He often took Aiden and two on wagon rides. At times he even offered discipline to Janelle if she were doing something that endangered herself or Janelle. Towards the last week of discharge, Janelle would seek out Aiden's father to play hide and go seek, pretend to feed him, or practice her latest dance moves. Aiden seemed to develop a special bond with Janelle's mother. He frequently ran up to her and gave her a hug around her leg. She would lovingly acknowledge him and give him a hug in return.

Aiden and Janelle appeared to form a friendship by the end of their stay even when other patients were present. They often sought out each other's company and exhibited happiness when playing together. Aiden looked very sad in his final discharge video. Janelle was not around, and he appeared to initiate play less. Instead, he wandered around as if he were looking for something. Similarly, by the time Janelle was discharged, Aiden was gone. During her final indoor and outdoor videos, she appeared to be bored and lonely.

Mateo did not necessarily share the same bonding with the other inpatient participants, but his mother similarly took on a vested interest in the other patients. At times she retrieved toys and supplies for other children to play with. At one point, she

noticed Janelle wandering around, and she retrieved a child-sized car for Janelle to drive. She also learned the names of the other patients and their families. She supported play of the other patients by removing barriers and encouraging her son to be polite and share toys with them.

Play emerges without structured support. There were times that play spread from the inpatient feeding wing play area into the Child Life playroom. On a few occasions, the participants entered the playroom during both structured and unstructured play times. Even though the Child Life Specialists were present, none of the participants were actively recruited to participate in the structured Child Life arts and crafts activities. Aiden and Janelle wandered into the playroom on two occasions during structured playtime. On the first occasion, both participants created their own play activities at the toy kitchen. They were able to obtain other play items scattered around the playroom without being reprimanded. They proceeded to engage in pretend play independently of the other group. Neither the Child Life Specialist nor the volunteers invited them to play nor sanctioned them for not participating with the group. During the third week when Janelle entered the Child Life playroom during structured hours, she was not encouraged to play with the other children but instead just wandered around the room watching her mom and the Child Life specialists. Mateo was noted to play in the Child Life room during unstructured hours. On one occasion, the Child Life Specialist was cleaning up the Child Life playroom and locked the cabinets. When he tried to open the cabinets, the Child Life Specialist explained that playroom hours were over and he could play the next

day. She said "See ya later." His mother encouraged him to imitate the phrase back to her and he did, but he did not make eye contact with her or attempt to request any toys from the cabinet before she locked them. On another play session during the second week of admission, two Child Life Specialists were unwrapping new toys at a table. Mateo was very interested in playing with the newly unwrapped sensorimotor toys. The Child Life Specialists allowed him to play with the toys but did not provide verbal cues or instruction on how to use them. He then became interested in evaluating the cardboard containers the Child Life Specialists were placing at the other end of the table. They allowed him to explore these boxes without sanction or redirection.

Toy Themes

Type of toys and equipment present foster different types of play. The toys present in the play area and playroom facilitated various types of play. The play area contained more sensorimotor toys such as musical and light up toys, a toy popcorn mower, large puzzles and books. When participants were in the play area, they tended to engage in more sensorimotor play. The child-sized table and chairs and the low couch offered some places for fine motor constructive play such as coloring pictures, playing music, putting together puzzles, or scribbling on a magnadoodle. In contrast, the playroom had a wider range of toys for more advanced developmental skills. There were more complex puzzles, a wider variety of books, and manipulative toys. The Child Life playroom also housed more pretend play items such as a play kitchen equipped with pretend dishes and food as well as multiple figurines and miniature cars. Each participant

was noted to spend more time participating in pretend play while in the Child Life playroom than when in the play area. The playground equipment was stationary and facilitated more gross motor play. The children were frequently observed to run, walk, climb up, climb through, and bounce on the outside playground equipment. Certain features of the playground equipment facilitated either sensorimotor play or pretend play. For example, the embedded train tracks, train engine with an actual steering wheel, and caboose fostered pretend play from each participant at least once. The participants often pretended to either be a conductor driving the train or a passenger in the train. The musical chimes and reversible checkerboard wall panels on the fort were used by all participants to stimulate sound.

Interest in Fine Motor Toys Dependent on Interest and Skill Level. Not only did the types of toys available affect the type of play the children exhibited, but the cognitive level and motor ability appeared to affect the interest the participants had in playing with fine motor toys. When Aiden engaged in play with objects, he often selected toys that were very easy to operate by pushing a large button, sliding a knob, or pushing an object back and forth to activate sound. He was much less interested in toys that required fine motor dexterity such as small knobbed puzzle pieces or books with thin pages. He was rarely able to turn one page at a time without assistance. Janelle, despite missing two digits on her right hand, enjoyed manipulating the magnadoodle pencil and eraser. She was able to push small switches to activate toys. She independently manipulated smaller toys in order to prepare pretend meals and iron. Mateo seemed to

exhibited longer attention when playing with fine motor toys. He spent the majority of an entire play session pressing keys on an adult-sized keyboard. Mateo spent several sessions playing with small figurines, miniature cars, or small puzzle pieces. He was able to look through books independently because he was interested in words and letters and had the skill level to turn pages individually.

Objects and Toys Used Differently than Intended Purpose. All three participants were observed to use furniture, objects, or toys in different ways than they were originally intended. Aiden used several items as chewing devices to achieve the oral sensory input he was craving. He was observed to use a spoon and play dish for pretending to feed his father but also used them as objects to chew while he walked around exploring other items. Aiden and Janelle also used the toy hampers as discovery boxes. At times Aiden seemed more interested in opening and closing the lid of the hamper than actually fishing a toy out from the bin. Janelle frequently varied the purpose of toys. For example, she began writing on the magnadoodle; however, later she decided to pretend it was a drum and decided to bang the pencil on the screen as if it were a drum and the pencil were a drum stick. She also used the beanbag as a crash pad to run into, and later as an oasis for resting and observing others play. She often enjoyed viewing the furniture or the wagon as a climbing surface. Mateo was also able to adapt furniture or other toys to serve different purposes in his play scene. Instead of riding his big wheel as he had in admission videos, he began using the big wheel to transport the chipmunk figurines and "take them for a ride." He transformed the leg of a chair in the Child Life

playroom into an escalator to transport the chipmunks to the ground floor so they could avoid the "fire." He similarly pretended that the wire-bead toy was a slide for the figurines to slide down. When he became agitated that his mother was absent, he used the magnadoodle as an item to bang in frustration when not using it as a writing surface.

Missing toys from home. Though the hospital provided numerous types of toys and playground equipment, the hospital lacked toys from home that may have been more developmentally appropriate for the participants. Aiden did engage with toys and objects during play sessions, especially with his fathers' assistance or Janelle's influence. However, he spent a significant amount of time wandering around. There did not appear to be many toys that sustained his interest or produced an elated affect. He appeared to have decreased interest in the hospital toys more than the other participants. Janelle seemed to enjoy playing with the pretend household items. She appeared capable of performing imaginary play. Yet aside from the pretend kitchen, there were no other gender specific toys to promote this type of play such as dress up costumes or baby dolls. In her last week of hospitalization, she appeared somewhat bored and disenchanted with the hospital toys. Mateo's mother brought several toys from his house to the hospital. Towards the end of his hospitalization, she pulled out a book bag containing various board games, puzzles, and books. These items seemed to offer a familiarity for him as well as a change from the hospital toys. Yet despite playing with familiar toys he asked his mother for specific toys and she replied, "No we don't have that here. It's in (the city he was from)."

Hospital Equipment and Staff Become Part of the Play Scene. All of the participants' play occurred within the context of the hospital environment and was consequently affected by the equipment present. Aiden and Janelle spent several minutes of a play observation exploring the public restroom when the housekeeper was present. They were originally distracted when the housekeeping cart blocked a part of the play area. They proceeded to peek inside the restroom and tried to play with the cleaning supplies until Aiden's father redirected them. Aiden on occasion used an empty medicine bottle to chew on during some observations. Each participant seemed to accept being examined by the pediatrician and nurses without aversion. Janelle was observed to play with her magnadoodle as the doctor placed the stethoscope on her chest and back. Mateo even laughed and smiled while he was being examined. The participants seemed to become comfortable with the nursing staff and engaged with them similar to caretakers at times. Aiden received significant positive praise and attention from the nursing staff. By the second week, he frequently wandered into the nurses' station and was positively acknowledged by the nurses.

Exploring medical equipment was also found to occur among participants as well. Aiden climbed onto a scale and attempted to perform a balancing game. This may have been an imitation of the frequent routine of being weighed by the hospital dieticians. Mateo often incorporated medical language into his pretend play scenarios. He mentioned "checking blood pressure" on a few occasions and made several references to "Texas Children's Hospital" where he had previously received treatment.

Pleasure Themes

Enjoyment of gross motor play. All participants appeared to exude happiness when participating in gross motor play. Aiden frequently walked, crawled, climbed, or slid. Janelle enjoyed walking, running, dancing, imitating animals, climbing, sliding, bouncing, crashing into bean bags, and riding. Mateo especially enjoyed propelling a big wheel, walking, running, sliding, bouncing, transitioning between equipment, and balancing on one foot or on unsteady surfaces. Most of these gross motor activities provided some form of vestibular and proprioceptive, input, which may have been self-organizing for the participants. Though some of the participants engaged in fine motor activities, all participants appeared to enjoy gross motor activities and opportunity to explore gross motor play both inside and outside.

Repetition of play activities. All of the participants were noted to repeat several activities over the course of their hospitalization. Aiden was most frequently noted to repeat oral seeking behaviors. Janelle repeated constructive play activities such as drawing pictures or serving food to people. Mateo tended to repeat common phrases or play themes during his pretend play. Each participant appeared to engage in these repeated activities perhaps for different reasons. For example Aiden seemed to enjoy the sensory input that chewing on objects and his fingers gave him. Mateo seemed to perform self-stimulatory behaviors frequently, perhaps in an attempt to regulate himself after becoming too excited or overwhelmed.

Social Play with Caregivers Is Fun. All participants were observed to exude happiness when they received praise from caregivers during social play. The caregivers did not necessarily have to be the participants' parents but ranged from the nursing staff to the parents of other participants. In the case of Aiden, he was observed to exhibit the most joy when he was playing social games with his father such as peek-a-boo, hide and go seek, or pretend feeding. Janelle enjoyed her mother praising her drawings and her father responding to her request and pulling her in a wagon ride. She displayed zeal when playing hide and go seek with Aiden's father during the discharge week. She enjoyed showing off dance moves and receiving feedback on her performance. Mateo displayed little interest in social play with other children, but he did smile and laugh when he and his mother were cooperatively drawing shapes on the magnadoodle. Even though he minimally engaged in cooperative play with his mother, he followed her verbal cues and exhibited more playfulness when she structured his play routine than when she was not present to do so.

Watching Others. All three participants were noted to observe others playing. Aiden spent a majority of his play sessions during admission week watching other children and adults who were present in the play area. He seemed to be entranced by Janelle. At times he became so focused watching her play and activate toys that he stopped playing with the toy he was previously playing with. Watching Janelle play became more amusing to him than his own exploratory play. When Mateo was admitted, Aiden was intrigued by the Pedi-wrap splints applied to Mateo's arms and similarly

focused his attention on watching Mateo manipulate toys. Janelle was very aware of other children and adults in the play environments. During a play session in the Child Life playroom, she occupied a portion of her time observing the Child Life specialists, other patients, and their parents. Janelle watched an older non-feeding patient playing on the teeter-totter with his father. Though she approached them, she appeared to read their social cues that they were content playing by themselves and retreated to the caboose where she watched them longingly. Mateo tended to observe more objects than people. He enjoyed visually staring at the aquarium. He displayed less eye contact with people but enjoyed looking up at the sky when he heard planes overhead. He watched the Child Life Specialists unwrapping and organizing toys.

All three participants were keenly aware of the camera and made direct eye contact with the research assistant through the camera. They enjoyed watching others, yet didn't seem to mind being watched by the researcher assistant and camera. They appeared to enjoy being filmed and made direct contact with the research assistant on a few occasions. Aiden gave the research assistant a hug on two occasions close to discharge and Mateo waved "hi" to the camera on a few occasions.

It's fun to add challenge. Each participant was noted to add challenge to their play activities over the course of the hospitalization. Aiden explored more challenging gross motor actions such as climbing in the wagon, climbing up the slide, climbing on furniture, and balancing on medical equipment. Janelle added challenge to her play activities by adapting the purpose of the toy to find an unconventional use for the toy.

She enjoyed creating new dance moves and imitating animals using her body. Mateo increased the complexity of his play scenes. During his admission, he performed activities in isolation and quickly transitioned from one activity to another. By discharge he was participating in various play activities for longer periods of time and adding sequenced steps to the routines. For example, when playing on the outside playground, he pretended to walk along the train track, pretended to be a conductor and drive the train, and then he ran to the chimes on the wall panel and with his mother's help pretended he was making train whistle sounds. His figurine routine was enhanced by incorporating furniture in unconventional ways. All of the children appeared to enjoy being adventurous and adding challenge to their play routines.

Diagnostic Thematic Analysis

The overall individual themes of the qualitative analysis from each child were reanalyzed using a diagnostic perspective. All participants had a primary diagnosis of feeding disorder or failure to thrive as a primary diagnosis in order to qualify for admission to the inpatient feeding program. However, each of the three participants had at least one other medical diagnosis that may have affected their play. Aiden was diagnosed with coarction of the aorta with pulmonary hypertension. He underwent surgery when he was less than a month old and was placed on supplemental oxygen until 8 months of age. He was subsequently diagnosed with hypotonia, abdominal diastasis, developmental delay, and apraxia. These diagnoses support many of the qualitative findings. For example, "low tone" was mentioned in the field notes of both the principal

investigator and second qualitative reviewer on a few occasions. He seemed to have decreased overall strength and endurance that may have been directly linked to his low muscle tone and poor cardiac output. Instead of persisting with play activities, he frequently moved onto other activities that were less challenging. Perhaps his increase in more challenging motor behaviors over time was due to his increased nutritional status that may have impacted overall endurance. His diagnoses of developmental delay and apraxia shed light on many of the findings related to his difficulty with performing novel motor tasks. Praxis involves the ability to initiate motor actions, recruit the appropriate body systems and muscles to execute the motor task, actually execute the motor task, and re-evaluate one's performance on the motor task. Aiden was frequently noted to wander around. His father often retrieved toys for him, demonstrated how to use the toys, and assisted him if he "got stuck" during an action. At other times he was noted to stop and stare at Janelle. This may have been because he had difficulty knowing how to imitate the activities she was doing. These qualitative observations suggest that Aiden may have had difficulty with both ideational and executional praxis.

Aiden was found to engage more in sensorimotor and gross motor play. These levels of play generally occur before constructive fine motor play, pretend play, or play with games, according to developmental theorists. Perhaps he was less likely to play with puzzles or more complex toys due to the delayed developmental level. Similarly, he was noted to imitate simple symbolic play like pretending to pour something into a cup or placing a pretend plate in the toy microwave. He tended to engage in symbolic play only

when others were present to either demonstrate how to do such actions or provide positive support to facilitate the pretend play. Rarely was Aiden observed to clown or joke or create an imaginative action or play scenario. His preference of more sensorimotor activities appeared to be appropriate considering his developmental level.

Janelle had a medical history of patent ductus arteriosus repair at 1 year of age. She also had a gastrostomy tube placed at birth. She was born with bilateral hand anomalies including the loss of digits two and five on her left hand and digit three of her right hand. Though she was missing digits, her initial evaluation indicated that she exhibited very functional skills. She needed assistance for cutting with scissors but was able to snip and maintain a tripod grasp of a marker. She also had delayed language for her age. In her initial evaluation she was noted to identify some body parts verbally but all by pointing. She was noted to communicate by gestures and some words. She was able to identify all of her colors and knew answers to age-appropriate orientation questions.

Despite having medical diagnoses of feeding disorder, cardiac problems, and limb anomalies, Janelle appeared to find ways to be playful. There were times where she threw toys down or played too roughly with them and then needed her mother to fix them. This potentially could have been due to her not having enough dexterity to manipulate intricate toys. Since she did not have the verbal communication skills to express her frustration, she may have thrown the toys or played with them too roughly. Her persistence to overcome most obstacles she faced and find ways to enjoy playing may

have been a function of the adaptiveness she has gained overtime. She was determined to attempt play activities she wanted to engage in and often exhibited creative ways to obtain toys such as knocking over the hamper so she could reach them. She seemed to be aware of what activities she was good at and sought those out such as dancing, pretending, and drawing. Yet her adventurous curiosity led her to explore challenging activities. This determination may have been a tribute to her cognitive skills. Even though she wasn't able to verbally express herself or manipulate things as well as she may have desired, she appeared to understand what her strengths were and had enough drive and motivation to make most situations playful. Her desire for social praise from adults may have given her feelings of validation for mastering a difficult task.

Mateo was diagnosed with Type I diabetes and autism in addition to feeding disorder. The diagnosis of autism may have greatly affected his play skills. Mateo exhibited some of the key diagnostic features of autism during his play such as repetitive stereotypic behavior, decreased communication, and decreased socialization. He was frequently noted to "be in his own word" and "oblivious to other children" in the field notes of both the principal investigator and the second qualitative reviewer. Instead of socially interacting with peers, he tended to view other children as obstacles along his driving path. When other children approached him to play he displayed poor framing ability to recognize their cues and give back socially appropriate cues. His mother often had to facilitate his awareness of others by telling him to be careful of others when playing or to apologize or excuse himself when he invaded someone's space. Mateo was

very interested in letters and music. He was noted to look at books and make up words from puzzle pieces, which is related to the autism features of hyperlexia or savant behaviors. Mateo frequently repeated actions or phrases such as "Are you ready, let's go" or "Fire exit..." He was often observed to repeat lines from movies in a very echolalic-like manner. His self-stimulatory behavior such as flapping his arms and visually stemming on certain objects represent typical autistic features. These self-stimulatory behaviors at times interrupted his play and potentially ostracized him from other children playing near-by. Though sensory processing problems are not part of the official diagnosis of autism, there is a significant amount of research that indicates children with autism have significant sensory processing differences. Mateo was noted to be very aware and somewhat avoidant of loud environmental sounds that distracted him from play when he placed both his hands over his ears. He also seemed to be seeking of vestibular and proprioceptive input as evidenced by his selection and enjoyment of intense gross motor activity, propelling a big wheel, moving himself into various positions, and shaking his head.

Spitzer (2008) suggests that children with autistic spectrum disorders do not experience play the same way that typically developing children do. According to Spitzer, children with autism have an entirely different play structure and quality of play than typically developing children. Children with autism spectrum disorders tend to focus on object play, which involves exploring objects to learn about their sensory qualities and may develop into object manipulation. Children with autism have been found to focus

more of their attention on objects during play. Additionally, they tend to repeat actions and exhibit less creativity in playing with objects in different ways other than the intended manner. Relational play is also a typical feature of children with autistic spectrum disorders and tends to remain for longer time periods while typically developing children progress from relational play towards more functional play.

Mateo frequently exhibited relational play. He enjoyed constructing puzzles and coloring worksheets. He also tended to be very stereotypical and somewhat rigid in how he positioned the toys. He would frequently tell his mother what lines to say in order to carry out a scripted scene instead of her being able to say what she wanted. In terms of his social play with other children Mateo exhibited diagnostic characteristics that affected his ability to engage with peers playfully. Despite his difficulties with peer socialization, he was able to be playful with his mother. She provided cueing to foster socialization and pretend play. She frequently told him to pretend he was on a train when on the playground or that the table he was sitting at could serve as the upstairs for the chipmunks. With her help, he was able to suspend more constraints of reality than what may have been typical for a child with autism spectrum disorders.

Evaluating the participants' play from a diagnostic perspective yielded supporting information about their play during hospitalization. All three participants had at least two other medical diagnoses besides feeding disorder. When considering the characteristics of each diagnosis, the qualitative findings suggest that each child's play appeared to be affected. The fascinating discovery was that though each child had conditions that could

have stifled their play, the children were all observed to challenge themselves to play in ways that may not have been expected. For example, Aiden seemed to thoroughly enjoy climbing on furniture, which may have been particularly difficult for him because of his hypotonia, developmental delay, and apraxia. Janelle similarly enjoyed dancing, climbing, and drawing pictures. These skills may have been more difficult due to her cardiac condition and finger anomalies. Mateo illustrated common features of autism during his play, yet he exuded more pretend play and ability to suspend reality than would have been predicted, thanks to his mother's assistance.

Discussion

The purpose of this qualitative study was to learn how children play when they are hospitalized. Several questions emerged in the literature review that justified why a qualitative study assessing how children play during their hospitalization was necessary. Such questions included "How do children play when in the hospital?" "Does play emerge during unstructured time?" and "How does the hospital environment affect play?" This study produced numerous themes indicating that, in fact, children did play. Numerous themes and trends emerged that provided more insight to how the phenomenon of play occurs among hospitalized children.

How Do Children Play When in the Hospital?

The results of the qualitative study indicated that the participants played over the course of their hospitalization. Several themes emerged that explained how children played while they were in the hospital. Gross motor play was found to be a common

activity among all participants and a recurring theme. This finding contradicts previous literature that suggested hospitalized children move more slowly than other children (Kielhofner et al., 1983), explore their environment less actively (Gariepy & Howe, 2003), and feel ill and fatigued (Board, 2005). It is important to note that these previous studies have investigated children who were acutely ill with chronic illnesses such as leukemia, pulmonary conditions, or other medical conditions requiring monitoring in a pediatric intensive care unit. Whereas in the current study, though each participant had other medical conditions, none of them were acutely hospitalized for those particular diagnoses. All of the participants were admitted to increase oral intake of various foods and improve their nutritional status. Every child either had a nasogastric or gastrostomy tube that ensured an adequate level of nutrition to function. Perhaps since the children in this study were not acutely bothered by medical complications of their diagnoses, they may have had more energy to participate and seek out gross motor activity. Even if the children could not engage in gross motor play as intensively or for as long a duration, they seemed to enjoy transitioning between movements, climbing on furniture, and playground equipment.

The theme of "Fine motor play and manipulation of fine motor toys depends on the skill level of the child" was found to partially support the notion that hospitalized children exhibit lower developmental play skills than their chronological age (Kielhofner et al., 1983; Kuntz et. al., 1996). Each one of the participants had some form of developmental delay in language or motor skills, yet each displayed varying interest and

skill in fine motor play. Piaget (1962) asserted that play was an expression of cognitive abilities. In this study, the engagement of fine motor play appeared not only to be a function of motor ability but also of cognitive ability. Aiden was developmentally delayed and apraxic. Not only did he not have the motor skills to successfully manipulate smaller toys, but he also showed little interest in constructing and engaging with these items. Aiden needed more cueing from his father on how to manipulate toys. His decreased interest in these toys indicated that his cognitive ability to understand how toys worked suggests that he displayed a younger play age for fine motor skills compared to gross motor skills (Knox, 2008). Participants two and three seemed to have an understanding of how to use toys and became skilled at doing so. This may have been due to their age and cognitive understanding of how to use and find joy in mastering fine motor play activities. Participants two and three frequently performed fine motor play through coloring pictures, manipulating small toys, or preparing pretend food. Mateo even exhibited a high skill level for performing dexterous fine motor activities such as playing the keyboard, manipulating small puzzle pieces, or manipulating small figurines. Mateo was older and perhaps more skilled motorically. Yet, he also seemed to have an understanding of how to use tools or his hands to manipulate the toys. Janelle, despite missing fingers on both hands, showed a similar interest in performing fine motor dexterity. She demonstrated skilled compensatory methods and adaptive responses in order to master the fine motor activities she often engaged in. This ability to be playful by

compensating for physical limitations supported the finding of Harkness and Bundy (2001) that suggests children with disabilities could still exhibit playfulness.

Hospitalized children have been found to produce less variety in their play scenes (Gariepy & Howe, 2003,:Kielhofner et al., 1983; Kuntz et al., 1996). Furthermore, the play scenes that children do exhibit in the hospital environment have tended to be repetitive and focused on medical procedures. This notion was related to the themes of "Repetition of Play" and "Hospital Equipment and Staff Become Part of the Play Scene." Different theorists attribute the repetition of play activities to different factors. Erikson (1963) and Landreth (2005) suggested that children who experienced trauma or distress tended to replay or repeat certain actions over and over again in order to make sense of and gain mastery over a situation out of their control. Research has shown that hospitalized children display more repetitive play and less variation in play themes when compared to non-hospitalized children (Gariepy & Howe, 2003, Kielhofner, et al., 1983). This study further supports this notion as evidenced by each participant repeating various play activities throughout their hospitalization. Though there were opportunities where the participants were able to vary their play activities, there were still numerous occasions where the children reverted back to the same activities.

The reason for these repetitive behaviors seemed to differ among the participants. All three children enjoyed proprioceptive and vestibular input. They potentially sought out play activities that offered this sensory feedback in attempt to calm themselves. Many of the activities that the participants repeated, were ones that they were skilled at such as

Schkade (1992), when individuals are faced with an occupational challenge, they can perform different response patterns. A primitive response involves the individual repeating the same action or same method even if it is not working. A hyper mobile response involves trying multiple different actions without having a sound strategy. A mature response pattern occurs when the individual has achieved a balance between personal abilities with the demands of the environment. This mature response avails occupational adaptation that allows the individual to engage in the meaningful occupation he or she desires. At times, the participants realized their effectiveness, efficiency, and satisfaction to self and others were not optimal, and therefore, they were able to develop mature processes for adapting the situation. However, on numerous occasions, the response patterns remained static and primitive as evidenced by the children repeating the same activities.

Another prominent finding in the literature regarding how children play in the hospital setting asserted that hospitalized children were less likely to explore their environment (Gariepy & Howe, 2003; Kielhofner et al., 1983; Kuntz et al., 1996). The theme of "Play Expands over Time" directly contradicts this finding. The children were frequently noted to push the boundaries and expand their play space further and further away from the play area as time progressed. Part of this comfort level to keep exploring may have been linked to several factors including the openness of the physical environment, secure attachment to parents, and intact mobility. Thurber, et al. (2007) suggested that a child's adjustment to the hospital environment was influenced by

previous separation experience from caregivers, the emotional and behavioral status of the child prior to hospitalization, family relationships prior to hospitalization, illness and stressors related to hospitalization, and social supportiveness during hospitalization. In this study, all of the children had been hospitalized previously but appeared not to have negative past memories of the experiences. None of the children appeared ill from any acute medical conditions, and perhaps were even getting healthier each day from the increased nutrition. This may have increased the participants' energy and attention level. The participants also seemed very connected with at least one if not both parents. Perhaps this secure attachment to parents enabled children to volitionally explore the hospital environment. All of the children were also well exposed to socialization opportunities. These predictors appeared to be valid for the qualitative participants in this study. Since none of the participants exhibited negative predictors for hospital maladjustment, their level of adaptation to the hospital appears to have been higher. As they adapted to the environment, they appeared to be more comfortable exploring the environment.

Previous research indicates that hospitalized children are often at risk for social isolation (Board, 2005; Gariepy & Howe, 2003; Kielhofner et al., 1983; Kuntz, 1996; Morgan, 2010;Thurber et al., 2007). Kielhofner et al. (1983) found that hospitalized children were found to engage less with other children and show more instances of solitary play. This study partially contradicted this finding. The participants were all found to enjoy solitary play and engage in solitary play throughout their hospitalization. However, the theme of "Cooperative Play Emerges over Time" indicated that despite

being in a hospital environment, the participants were able to engage with other children during play. This theme is explored in further depth in the "Social Environment" section below.

Does Play Emerge during Unstructured Time?

Previous literature indicated that hospitalized children were less likely to play during unstructured play time than when the Child Life Specialists were directing play (Pass & Bolig, 1993). This study contradicts this near significant finding of Pass and Bolig (1993) and suggests that play emerged despite structured assistance from the Child Life specialists. The majority of the play observed for this study occurred during non-playroom hours. The children were observed to find toys, explore, and create multiple play areas, including the first floor feeding wing play area, the Child Life playroom, the outside playground, the hallways connecting the rooms, the nurses' station, and their bedrooms. During the few occasions in which the children entered the Child Life playroom during unstructured and structured play times, little effort was taken by the Child Life Specialists to engage them in structured constructive or group play. Instead, the Child Life Specialists took a more indirect approach and allowed the participants to select their own play activities, retrieve their own materials, and facilitate their own interest in sustaining the play scene. The Child Life Specialists provided structured activities for children who wanted to participate in them. They organized and ordered new toys to increase the variety of toys the children could play with. They maintained consistent boundaries with playroom rules, which may have interrupted play for some of

the participants. On one occasion the Child Life Specialist locked the cabinet and told the participant the playroom was closed. Fortunately, the participant was redirected to another available toy by his mother. There were numerous occasions where the children wanted to obtain toys but were unable to because the cabinets were locked. Yet even with the cabinets locked and not being guided in play activities the children were able to find other ways to play. Much of this adaptive behavior may have been assisted by the presence of another peer or a parent who helped facilitate play instead. This concept of the participants finding ways to entertain themselves and overcome barriers such as toys being inaccessible suggests that the participants exuded occupational adaptation in response to the occupational challenge presented by the hospital environment.

Previous literature purported that hospitalized children often developed boredom over time (Kielhofner et al. 1983; Kuntz et al.; 1996). Kuntz, et al. 1996 found that hospitalized children were less likely to engage in age-appropriate play activities and become disinterested in engaging with others over time. The current study concurred with this finding. The themes of "Wandering Around" and "Watching Others" supported this phenomenon of boredom. The children were frequently found to wander around aimlessly especially towards the end of their hospitalization. The children seemed less interested in exploring the play area, which may have been due to boredom. Instead of creating new challenges and maintaining active levels of play, the children were noted to walk around and observe other children playing or adults interacting. This sense of wandering from all three participants may have indicated a sense of boredom. Perhaps the

novelty of a new environment with new toys had worn off. Perhaps they were homesick for their familiar toys and environments. Thurber et al. (2007) suggested that hospitalized children often exuded higher levels of homesickness than children who experienced other types of separation. This notion was supported by the theme of "Missing Toys from Home."

How Does the Environment Affect Play?

Physical Environment. The physical environment appeared to highly influence the participants' play. In some cases, the environment seemed supportive of play, whereas at other times, physical elements of the environment greatly hindered play. Unlike previous studies that examined closed Child Life playrooms (Kielhofner et al., 1983; Pass & Bolig, 1993), this study observed play where it naturally occurred within the hospital. The theme of "Play Expands over Time" indicated that if given the opportunity to expand their play space, children will. All three participants were found to explore beyond the boundaries of the feeding wing play area. For the most part, the children were allowed to do so without sanction. The parents and hospital staff gave the children the choice to expand their play space. The participants moved from primarily playing in the feeding wing play area to eventually expanding to the entire southern and northern wings of the inpatient first floor. This pattern of changing play spaces may have evolved as an attempt to add novelty to the situation and discover or master the unknown areas of the hospital. The children seemed less entertained in the original play space. They appeared to enjoy the challenge of leaving the supervised area to go explore the

"fun" playroom. The openness of the feeding program and of this pediatric hospital as a whole allowed this to occur. If the hospital had been more stringent about children accessing areas independently, then the participants may not have exhibited as much joy in discovering play in new areas. Kielhofner et al. (1983) suggested that the hospital environment needed to provide enough challenge to keep the child's interest and create a designated play space where children knew it was okay to play. This pediatric hospital appeared to facilitate these two suggestions that enhanced the participants' confidence in exploring new play areas.

One of the most recurring themes was "Sensory Seeking Behaviors." The children were frequently reported to perform play activities that offered oral, deep tactile, vestibular, or proprioceptive input. Kielhofner et al. (1983) asserted that hospital environments needed to be structured in a manner that provided optimal sensory input. According to Kielhofner et al. (1983), hospital environments that do not provide enough sensory arousal do not entice children to play and interact with toys or other children. Contrastingly, hospital environments that were overly sensory arousing created anxiety and withdrawal. This study supported these claims as the children frequently tried to seek sensory input. If the environment was not meeting their needs, more wandering was observed. Similarly, for Mateo, who was auditorily sensitive to environmental noises, he exhibited avoidant behaviors such as covering his ears when the commercial public restroom toilet was flushed. Compared to the sensory experiences that White Room and Starlight Hall at the Schneider's Children's Hospital offered as depicted in the Haiat,

et al., 2003 study, this current study revealed that little consideration to the construction of an ideal sensory environment was considered when designing the play spaces. The majority of the sensory input was provided through the toys, not the embedded features of the hospital environment. Though Eisen (2008) found that representational artwork centered on nature scenes was less likely to produce anxiety, the bright colored abstract artwork hung in the play area and brightly colored playroom walls seemed to have little effect on the children's anxiety or enticement to play. However, the children's lack of visually attending to the artwork did support the finding proposed by Eisen et al. (2008) that children needed more active visual distractions or direct art to draw their attention.

The theme of "Gross Motor Play was Prominent among all Participants" was largely supported by the physical environment both inside and outside. Inside, the adult and child-sized furniture was transformed into climbing and balancing surfaces. The outside playground facilitated gross motor play and exploration among all the participants. They were frequently able to climb the stairs, slide down the slide, climb up the slide, bounce on the motorcycle spring toy, and ride the teeter totter. As Prellwitz and Skar (2007) suggested, the participants viewed the playground as a recognized play space where they were free to run, play, and explore. None of the participants had mobility devices that hindered them from accessing parts of the playground as Prellwitz and Skar (2007) had identified when interviewing children with disabilities on their perceptions of the playground environment. However, the theme of "Toys and Equipment Were Inaccessible" was found to support the findings of Prellwitz and Skar (2007). Even when

the children wanted to and seemed to have an understanding of how to use the equipment, they were unable to access the equipment because the equipment was too high or there were no other children present to balance the teeter totter. Additionally, Aiden, who was diagnosed with developmental delay and apraxia, had a difficult time initiating play activities on the play ground without the assistance from his father and therefore tended to repeat activities he was capable of performing. Aiden's behaviors supported the results of Prellwitz and Skar (2007) that found developmentally delayed children to less likely to access equipment that required more advanced cognitive and motor planning abilities. The fort, train engine, and caboose offered opportunities for the participants to engage in imaginary and pretend play. Even participants one and three who were diagnosed with developmental delay and autism respectively pretended to be conductors by turning the steering wheel or pretending to make a train whistle noises by activating the wall panel chimes. These behaviors were similar to the findings of Yuill (2007) that children with autistic spectrum disorders were more likely to engage in social play when the playground contained elements that facilitated imaginary play such as embedded train tracks.

One of the most interesting findings regarding the effect of the physical environment on play was the theme of "Toys and Equipment Present Determine the Type of Play." The play area contained many musical and cause-effect toys that tended to promote more sensorimotor play. The playroom contained a play kitchen with pretend food and household items. The participants were found to engage in much more

imaginary and pretend play when in the Child Life playroom. The playground housed stationary play ground equipment that promoted gross motor and some pretend play. This finding supported much of the previous literature that emphasized the importance of developmentally appropriate toys within a play area to promote optimal levels of playfulness (Gariepy & Howe, 2003; Haiat et al., 2003; Kielhofner et. al., 1983; Kuntz et al., 1996).

The theme of "Hospital Equipment and Staff Become Part of the Play Scene" emphasized how the participants used the physical elements of the environment to serve as part of their play. This concept relates to the concept of occupational adaptation proposed by Schkade and Schultz (1992). The children were presented with various furniture or people that could have interfered with their play scene. On numerous occasions, however, the participants were found to achieve mastery over the environmental challenges posed to them. If furniture were too high for them to sit on, they turned it into a climbing surface. If too many people were present, they found other places to expand their play or made the people part of the play scene as evidenced by Mateo when he zoomed around patients and their family members as if they were obstacles on his driving path. The children were surrounded by medical equipment and objects that would not have been typical in their home environment. Rather than withdrawing from the play spaces that housed this equipment, the participants found ways to incorporate these objects into their play scenes. They exuded the ability to adapt

to the challenges presented by the environment to successfully engage in the occupation of play.

Social Environment. The results indicated that play was significantly affected by the social environment. The theme of "Parents and Caregivers Support Play" suggested that the social features of the hospital environment may have been the most important to facilitate play. Most of the children exuded increased happiness and playfulness when their parents were nearby or were actively engaged with them during their play activities. Previous research has found that much of anxiety of hospitalized children was created by separation from parents or caregivers (Abbot, 1990; Shannon, 1984; Shields, 2001). Perhaps when the participants' parents were present, the participants felt more secure and willing to explore their new environment more readily as Greenspan (2002) suggested that securely adjusted children tend to do. When caregivers were not present, the participants exhibited more boredom, loneliness, or frustration.

The "Sharing of Families" theme similarly supported the notion that the social environment was crucial to facilitating the play of the participants. This finding may be attributed to a multitude of other factors. For example, the length of stay may have increased the families' attempts to connect with other families experiencing pediatric hospitalization. This phenomenon may not have developed in a more acute setting where families discharged quickly. All families stayed for at least three weeks and admitted within close proximity to each other. The parents appeared to provide support to each

other and each other's children since they were all experiencing similar stressors of being away from home, other family, and friends. Perhaps this additional support made the hospital experience more bearable and more playful for the participants. The families and children seemed to grow closer over time. As they became more comfortable with each other, more traditional boundaries faded. The parents helped the other participants play. They also provided disciplinary boundaries for safety. The families tended to lose the concept of physical boundaries and welcomed other children to visit their child's room. The participants all had their own rooms but also had the benefit of frequent socialization due to the physical environment and the culture among the children's families to share space and facilitate play for all the patients, not just their own children.

The openness of the physical environment may have fostered this increased social environment. The rooms were in close proximity to each other and were all connected to a central play area where children could openly wander in and out of. The open hallways allowed the children to pass into the nurses' station and into an open Child Life playroom. Bundy (1993) and Kielhofner et al. (1983) suggested that children are more playful when they perceive they have a designated, safe place to play. The openness of the first floor wing with two designated play spaces presented the children with frequent opportunities to play and engage with toys, almost as if they were at home. Unlike Child Life playrooms in other pediatric hospitals that were housed in remote wings or were kept locked during non-playroom hours, this pediatric hospital allowed the children more freedom to explore various play areas and socialize with other patients. This hospital

layout provided a nice compromise to the debate about single occupancy versus double occupancy as Morgan (2010) reported. Perhaps having single occupancy rooms grant privacy and a sense of personal space, but also allowing for open access and a more home-like environment may offer the balance of privacy, infection control, and socialization to enable greater playfulness.

Previous literature suggested that hospitalized children exhibit play differently than typically developing children (Gariepy & Howe, 2003; Kielhofner et al., 1983) In particular, hospitalized children were found to display less parallel and cooperative play, show less variation in their play, and explore less of the hospital environment. Though this qualitative study did not evaluate typically developing children, this study contradicts and supports the previous notions about play among hospitalized children. Each qualitative participant was found to engage and enjoy solitary play. However, all participants were found to increase their levels of parallel and cooperative play, indicating that despite being in the hospital, they were able to engage in more social play. Even Mateo, who had limited social skills due to the diagnosis of autism, respected the space of others playing next to him and even attempted to communicate with peers as his hospitalization progressed.

Although each child participated in increased levels of cooperative play by discharge, the level and skill of cooperative play varied among participants. This finding may indicate that cooperative play is more a function of cognitive ability to read and give social cues, or framing, according to Bundy (1993). Janelle was the most socially adept

social cues and respond to social cues appropriately." Janelle appeared to thoroughly enjoy interacting in social play with adults and other children. She was able to recognize that other children were not able to verbally communicate or understand how to play with toys like she was. Furthermore, she was skilled at reading non-verbal cues. She understood when it was appropriate for her to enter a play scene with others and when to refrain from doing so. She appeared most content when she was receiving attention from adults and entertaining them.

Cultural environment. All three participants were of different ethnic and socioeconomic backgrounds. Each participant came with different experiences and values. Yet within the hospital setting, there seemed to be a "Hospital Culture" that emerged. The "Sharing of Families" and "Open Space Promotes Play" themes supported this notion. The participants' families developed a bond as they progressed through the hospitalization. The parents served as caregivers not only to their own children but to the community of other patients sharing the same space, and in particular other families in the inpatient feeding program. The nursing staff helped facilitate play by allowing the children to expand their play space and explore the environment as if they were at home. The nurses, nursing techs, and Child Life Specialists gathered and provided toys for the children to play with. At times, the nursing staff engaged in cooperative play. The hospital culture in this study, contrary to the findings of other research, was very important in promoting play and playfulness (Board, 2005).

Study Limitations

This study was a descriptive qualitative study using an ethnographic tradition to explore how play occurred amongst hospitalized children. Although many forms of triangulation were performed to enhance credibility and trustworthiness, this study did have limitations. The study consisted of three participants. Although there were two boys and one girl and all were from different socio-economic and ethnic backgrounds, the sample was small. Additionally, even though each participant had some other form of medical condition besides a feeding disorder, the participants were not acutely ill like other various pediatric diagnoses that warrant pediatric hospitalization. One must, therefore, take caution when generalizing the findings of this study to other hospitalized children. Another limitation to the study was the awareness of the participants that they were being videotaped. Though the research assistant attempted to be non-conspicuous and serve as a non-participant observer, each participant was aware he or she was being filmed. This was a challenging obstacle as the children were constantly moving, and in order to hear what they were saying and see what they were doing, a static, hidden camera would not have sufficed. Unfortunately, the trade-off involved a more conspicuous observation method that might have impacted the participants' natural play.

Implications for Future Research

It is recommended that more qualitative studies evaluating play in hospitalized children be performed to add credibility of the findings and discover a deeper understanding of how play among children occurs when they are hospitalized. Evaluating

a larger sample of children with various diagnoses would reduce some of the sampling biases that occurred in this study. Also, utilizing different data collection methods such as interviewing the children about their play experiences would add another source of triangulation and provide a different perspective. Perhaps performing a qualitative analysis of multiple play sessions of the child in his or her home environment prior to hospitalization would be beneficial to gain a better understanding of the differences in play at home and in the hospital.

Clinical Implications

Though the findings of this study cannot be generalized to other hospitalized children, this study increased awareness of how children play in the hospital. This study did attempt to answer some of the questions and gaps in the literature about play during pediatric hospitalization. The findings provide many clinical implications for occupational therapists, Child Life specialists, nursing staff, health care architects, and interior designers about how to facilitate play in the hospital environment. Occupational therapists have skilled training in the personal and environmental factors that influence individuals' participation in daily occupations. In particular, pediatric occupational therapists are trained on the importance of play as a valuable childhood occupation. Child Life specialists similarly have extensive knowledge of child development and training to promote normative childhood experiences, sibling involvement, and decreased anxiety amongst hospitalized children. The pediatric nursing staff was found to be a vital part of promoting play by fostering an open environment and allowing families and children

choices as to where and how they wanted to play. Working in collaboration, these disciplines can help structure pediatric hospitals to promote optimal physical, social, and cultural environments to facilitate play. One of the most crucial findings was that the parents and caregivers were invaluably important in promoting play for their children. This study provides support to the argument that pediatric hospitals need to consider the needs of families and provide an environment that supports parent, child, and sibling interaction. The physical environment was found to be an important factor on the children's ability to access toys, explore, and entice the children to play. Certain physical aspects of this hospital were found to be supportive of play while others were not. Hopefully the findings of this study can inform architects and interior designers to create pediatric hospital environments that promote play and playfulness.

CHAPTER IV

STUDY 2

Is playfulness among children different at home compared to the hospital?

A quantitative analysis

Purpose

This study was designed to measure playfulness among children at home and at the hospital. Few studies within occupational therapy have evaluated playfulness among children in the hospital, and no studies have investigated playfulness among the same children while at home and in the hospital (Kielhofner, et al., 1983, Gariepy & Howe, 2003). Most hospitalizations are emergent, unplanned, and involve a change in medical or cognitive status. These factors have impeded studies on play to generate causal statements about how playfulness differs from the home environment compared to the hospital environment. The inpatient feeding program used in this study offered a unique opportunity in that each child had a pre-planned admission and discharge date that enabled the researcher to evaluate playfulness of children in their home environments prior to hospitalization and upon admission and discharge from the hospitalization. If playfulness is a child's expression of adaptiveness (Hess & Bundy, 2003), then by investigating playfulness in a familiar environment, in an unfamiliar environment, and

after several weeks of exposure to the unfamiliar environment, the researcher could assess how a child's playfulness varied in different environments. It was expected that children who illustrated a high level of playfulness at home would show higher levels of playfulness in the hospital because these children were able to adapt to challenges and find ways to exude joy. Further, it was expected that as children became more familiar with the hospital environment, they would exude increased adaptiveness as expressed by playfulness. Hypotheses were 1) Children with higher levels of playfulness at home will exhibit higher levels of playfulness in the hospital at admission, and 2) Children will exhibit higher levels of playfulness at discharge from the hospital compared to playfulness scores at admission.

Method

Design

A repeated measures design was implemented for the second and third studies. A repeated measure design eliminates error due to individual differences and enables the researcher to measure differences in the individual across time (Munro, 2001). Additionally, a repeated measures design allows the researcher to compare differences within the same subjects of a sample across multiple measurements (Gravetter & Wallnau, 1995). In this study, each participant's playfulness was assessed at three different points in time in both indoor and outdoor settings, at home prior to admission to the hospital, at admission, and at discharge from the hospital. The timeline of the data collection was one year beginning in January 2010 and ending in December of 2010.

Each inpatient feeding candidate typically stayed an average of 3to 4 weeks. Home video footage was taken by the families or the research assistant within one month prior to each participant's admission to the inpatient feeding program.

Participants

Participants were selected using convenience sampling based on the children selected to the inpatient feeding program. Inclusion criteria were 1) that the child be a candidate within the inpatient feeding program, 2) that the child had an appropriate pre-admission evaluation such as an outpatient feeding evaluation (OFA), infant feeding evaluation (IFE), or an evaluation by a relevant discipline completed, and 3) that the child's family had brought pre-admission video footage of the child playing at home, and 4) that the child's parents provided informed consent for the child to be a part of the study. Exclusion criteria were any child who was under the age of one year or above the age of ten years or was under the custody of child protective services. Twelve participants were recruited to the study; however, only nine participants completed data collection. Three participants were excluded due to discharging prior to final discharge video being taken. One of the potential participants submitted pre-admission data and had all videos taken during admission and discharge. However, the pre-admission video was not able to be read even after multiple attempts to retrieve the video data. The participants ranged in age from 14 months to 5 years of age (M = 2.88 yrs, SD = 1.25 yrs). Of the eight participants, six were male and two were female. Demographic information about the participants may be found in Table 4.

eight participants, six were male and two were female. Demographic information about the participants may be found in Table 4.

Setting

Each participant was videotaped for at least five 15 minute play observations. The participants were videotaped both indoors and outdoors at home, at admission, or at discharge. For the home visits, the parents or caregivers selected an area inside and outside of the home where the child most frequently played and recorded 15 minutes of video while the child was playing in each environment. For the hospital video recording, the research assistant video-taped each participant in the inpatient feeding wing play area, the Child Life playroom, or the outside playground. Video footage was taken of the children naturally selected play areas of the hospital.

Instruments

Outpatient Feeding Assessment (OFA), Infant Feeding Evaluation (IFE) and/or Admitting Evaluation Paperwork. The specifics of these documents are described in the methodology section of study one. These documents gave detailed information about the child's age, diagnoses, previous exposure to hospitalization, skill ability level, and play interests at home.

Test of Playfulness. The Test of Playfulness (ToP, Skard & Bundy, 2008) is a 29-item standardized observational checklist to measure a child's level of playfulness and is found in Appendix C. According to the ToP protocol, the child is observed for a 15

is rated on a 4-point ordinal scale for extent, intensity, or skill. The ToP has been administered to over 2,000 children including typically developing children and children with various disabilities (Hamm, 2006; Harkness & Bundy, 2001; Hess & Bundy, 2003; Okimoto et al., 2000; Reed, Dunbar, & Bundy, 2000). Each item was subjected to Rasch analysis to determine if the items met the assumptions that easy items are easier for everybody and that more playful children will have higher playfulness scores (Bundy, 2009). The ToP has demonstrated good test-retest reliability (Brentnall, 2005; O'Brien & Shirley, 2001; Scott, 2003). In order to administer the ToP, the examiner must be calibrated, which involves watching videos of children playing and submitting ToP scores to the authors. The author of the assessment then assesses if the examiner's scoring meets criterion for leniency and stringency using Rasch analysis. Once calibrated, the examiner may then administer the ToP for research purposes.

When administering the ToP, the scorer gives a zero, one, two, or three for the extent, intensity, and skill of each item on the ToP score sheet. The raw score is entered into the *Facets* Rasch analysis statistical program (Linacre, 2011) to produce a measure score and standard error. The measure score is an interval score that compares the child's mean level of playfulness amongst a normative sample of children. For the normative sample of children that the ToP has been tested on, the raw score is 90, which is equivalent to a measure score of zero with a standard error of 0.17. The mean ToP measure score for typically developing children is .43, and the mean ToP measure score of children with disabilities is -.43 (A.C. Bundy, personal communication, on March 11,

2011). Measure scores that produce a mean squared value of greater than 1.4 or a standard value greater than two are considered to be out of range for fitting within the ToP Goodness of Fit Rasch analysis model. When interpreting ToP scores for statistical and clinical analysis, if a measure score is found to be above 1.4 or the standard values exceed two, the scores must be interpreted with caution.

Data Collection Procedure

The three inter-related studies were submitted for IRB approval from hospital IRB committee, followed by submission to Texas Woman's University internal review board. The hospital IRB board approved the study in August of 2009, and TWU internal review board approved the studies in December of 2009. Data collection commenced in January 2010 and concluded in December of 2010.

While waiting for IRB approval, the principal investigator remained in contact with Dr. Bundy to begin the calibration process for the ToP (Skard & Bundy, 2008). The principal investigator watched a total of ten ToP training videos consisting of five children playing in both indoor and outdoor settings. The principal investigator scored the videos and completed the ToP score sheets and ToP key forms. These were sent to Dr. Bundy for analysis. Dr. Bundy analyzed the principal investigator's ToP scores from the training videos using Rasch analysis produced by the statistical program *Facets* Rasch Analysis Program (Linacre, 2011). Results indicated that principal investigator received a mean squared score of 1.38 with a standard deviation of 4.4 for indoor playfulness and a mean squared score of 1.40 with a standard of 4.3 for outdoor playfulness resulting an

a mean squared score of 1.38 with a standard deviation of 4.4 for indoor playfulness and a mean squared score of 1.40 with a standard of 4.3 for outdoor playfulness resulting an overall measure score of -0.24 (A.C. Bundy, personal communication, February 11, 2011). According to Dr. Bundy, the mean squared values fell within acceptable limits. In regards to the standard scores, there were two items, extent of mischief and clowning or teasing, that fell out of acceptable range (>2 for MnSq). Dr. Bundy stated that these items are commonly misinterpreted and will eventually be removed from the ToP. She consented to the principal investigator using the ToP for research purposes but requested that the mischief and clowning items listed above be removed from the ToP when analyzing the data for studies two and three. Therefore, when the principal investigator watched videos of each play session, she gave numeric scores for all items except for mischief and clowning items. The ToP measure scores all reflect the adjusted totals without the clowning and mischief items.

To recruit participants for the dissertation studies, the families of candidates who were scheduled to enter the inpatient feeding program within two months were sent an information letter that explained the purpose of the studies and what would be required of the families. The principal investigator then called the parents of the potential participants after the letters had been delivered to discuss the studies and obtain verbal consent for their child to be a part of the studies. If the families possessed a video camera or had easy access to a video camera, then the families were asked to record 30 minutes of video while their child was playing in both indoor and outdoor settings (15 minutes of each

contact them when they were admitted to the hospital in order to discuss the informed consent paperwork and collect the pre-admission video from them. The participants who lived within the city whose parents did not own a video camera or have easy access to one were offered the opportunity for the research assistant to go to their house and take video footage of their children playing at their home with the camera owned by the principal investigator. For the two families that opted for this option, the researcher assistant reviewed the informed consent paperwork with the family, had the families complete the informed consent, and then videotaped the participants.

Once the children were admitted to the inpatient feeding program, the research assistant met with the parents of the families who had not completed informed consents already. She followed the same procedure for the families whom she visited at their homes. The research assistant took 15 minute video recordings of each participant playing in both inside and outside designated play areas within the hospital during the first week of admission. During the week of discharge the research assistant took video recordings of the participants playing. The research assistant then constructed a system of organizing the hospital videos in a random sequence so that the principal investigator would be blind to the order of the video clips. Because there was only one data collection point in the home environment, it was not possible to blind the principal investigator to the time frame of the video footage for the home environment. However, since video footage took take place in the same indoor and outdoor settings within the hospital at admission and discharge, the principal investigator evaluated the video without knowing

whether the video footage is of the child at admission or discharge. Once all of the videos had been scored, the principal investigator was able to identify the admission versus discharge data in order to run statistical tests. The principal investigator completed a ToP score sheet for each data point. For four of the eight participants, there were a total of six ToP forms completed (indoor at home, outdoor at home, indoor at admission, outdoor at admission, indoor at discharge, and outdoor at discharge). Four of the participants were missing pre-admission outdoor video footage, and therefore only had five total ToP forms were completed.

Data Analysis

Descriptive information such as age, gender, ethnicity/race, and diagnosis of the participants may be found in Table 4.

Table 4

Study Two and Three Demographic Information

Participant	Age	Gender	Race	Additional Diagnoses
Aiden	2 yrs	Male	White	coarcion of the aorta, pulmonary hypertension, developmental delay, apraxia
Janelle	2 yrs	Female	Black	patent ductus arteriosus, congenital missing of a kidney, GERD, webbing of toes, missing of UE digits bilaterally
Mateo	5 yrs	Male	Hispanic	Type I diabetes, autism
Isaac	3 yrs	Male	Black	Global developmental developmental delays, s/p prematurity, short bowel syndrome
Sarah	14 mos	Female	White	TAPVR (total anonymous pulmonary vein return)
David	3 yrs	Male	White	hydronephrosis with renal insufficiency, hypertension, nerogenic bladder, anomalous left coronary artery, GERD
Joey	3 yrs	Male	White	Perinatal complications, Wolf-Hirsschorn syndrome, kidney reflux, asthma, seizure disorder, inguinal hernia, hypospadias, strabismus
Caleb	4 yrs	Male	White	No other diagnoses other than feeding disorder

The level of playfulness served as the dependent variable. The independent variable included the time of hospitalization (Prior to, at admission, and at discharge).

The ToP scores from its score sheet were transferred to the ToP keyform. The scores were transformed into combined ToP measure scores using the Facets Rasch Measurement Program (Linacre, 2011). To test hypothesis one that participants with higher playfulness scores at admission would show higher playfulness in the hospital, a Spearman rank multiple correlation test was run. In order to test the second hypothesis that playfulness would be higher at discharge than at admission to the hospital, three Wilcoxon signed rank tests were performed in order to examine the change in playfulness between each time period.

Results

The results of the Spearman-rank multiple correlation test yielded significant correlations between all data points below the .01 level. The correlations between combined ToP measure scores can be viewed in Table 5. The mean playfulness scores for the participants were found to be .225 (SD = 1.078) at pre-admission, .069 (SD = .763) at admission, and .364 (SD= .763) at discharge. These results indicate that although the participants as a whole were not as playful as typically developing children, who display an average playfulness of .43, the participants in this study were found to be more playful at each data point than children with disabilities, who display a mean playfulness score of -.43.

Table 5

Correlation of Combined Playfulness Sores

Measure	Pre-Admission	Admission	Discharge
Pre-Admission	-	.857*	.850*
Admission	.857*	-	.886*
Discharge	.850*	.886*	-

Note. "*" represents a correlation of $p < .01$ level.

In order to determine if there were any differences in playfulness between each of the time periods, three Wilcoxon signed rank tests were performed to evaluate pair-wise comparisons. The results showed no significant differences in playfulness between pre-admission and admission, $Z = -.338$, $p = .735$, or from pre-admission to discharge, $Z = -1.183$, $p = .238$. There was, however, a significant difference found between admission to discharge, $Z = -2.197$. $p = .028$. This finding illustrates that playfulness significantly increased from admission to discharge. The ToP scores and standard error for each participant and for the group as a whole are listed in Table 6. Figure 1 illustrates the change in playfulness scores for each participant across time periods.

Table 6

Test of Playfulness Scores (Indoor and Outdoor Combined)

Participant	Preadmission		Admission		Discharge	
	Score	SE	Score	SE	Score	SE
Aiden	-.49	.25	-.33	.18	0.00	.18
Janelle	2.21	.40	.68	.18	.68	.18
Mateo	-.09	.18	-.68	.18	-.09	.17
Isaac	.98	.19	.61	.17	1.56	.21
Sarah	-.12	.17	-.21	.17	-.09	.17
David	-.06	.17	-.06	.19	.12	.17
Joey	-1.37	.30	-.85	.20	-.62	.18
Caleb	.74	.25	1.39	.20	1.35	.20
Total Mean	.23	.38	.07	.27	.36	.27

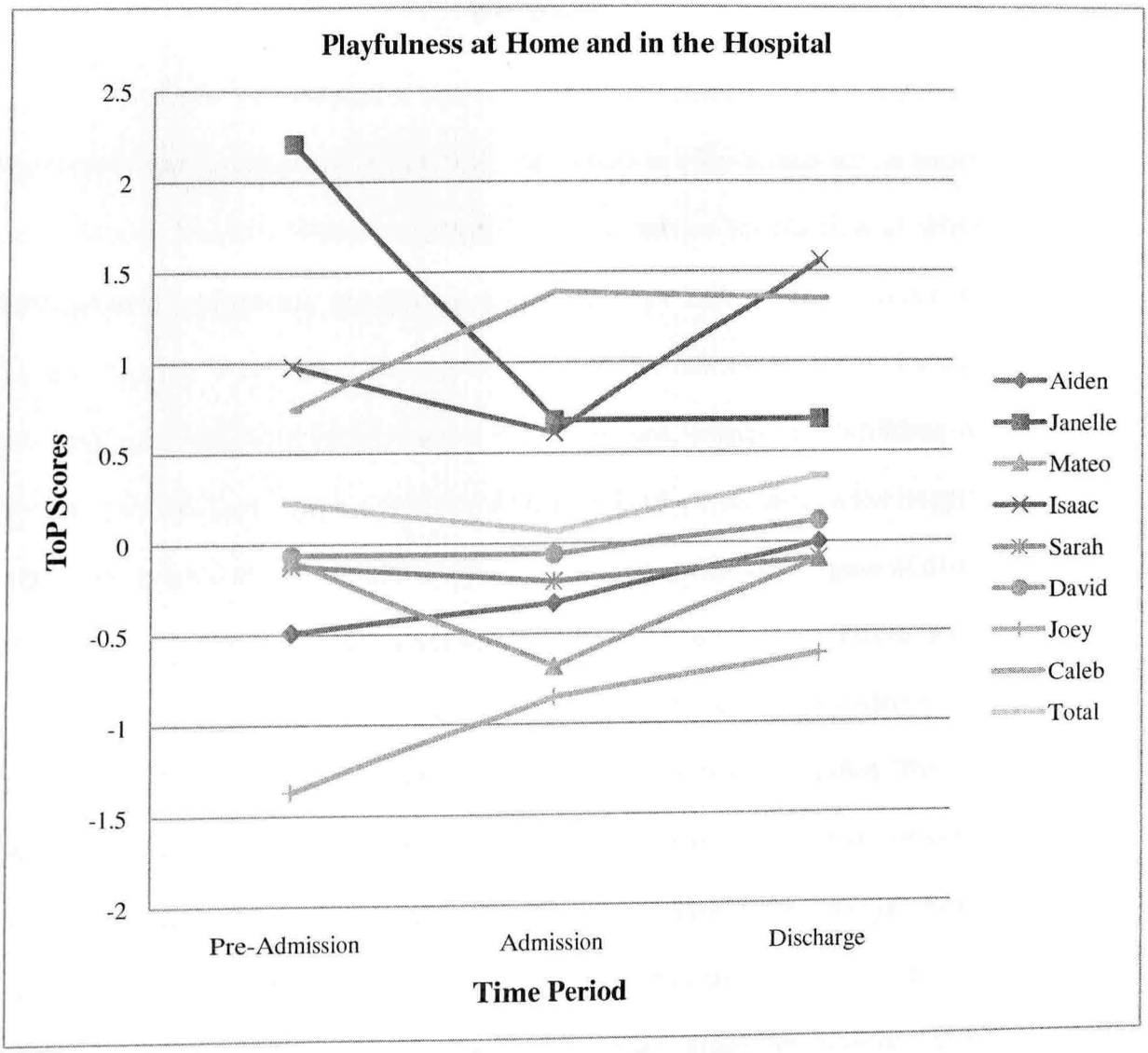

Figure 1. *Test of Playfulness Scores (Indoor and Outdoor Combined)*

Discussion

This study was designed to measure playfulness among children at home and at the hospital and to determine if there was a difference in playfulness across these environments. The results illustrated significant correlations for playfulness scores between each time period. This finding suggests that the ToP combined scores were closely related to each other between pre-admission and admission, pre-admission and discharge and admission and discharge. Hypothesis one, which stated children with high levels of playfulness at home would show high levels of playfulness in the hospital, was supported. Results also indicated that playfulness was significantly higher at discharge than at admission, which supports hypothesis two. Playfulness is an expression of a child's adaptiveness, and play is a method of achieving mastery. The positive relationships found at each time period across settings support this notion. The participants who were more playful at home were also more playful in the hospital. These participants demonstrated the ability to exhibit intrinsic motivation, internal control, freedom to suspend reality, and appropriate framing. They had mastered their familiar home play environment to produce a playful experience. When the children were exposed to a new situation of hospitalization, they exhibited creativeness to approach the new environment with open-mindedness and joy. The results indicated that this playful demeanor was expressed in the hospital as well as at home. Likewise, children with lower playfulness scores at home were found to produce low playfulness scores in the hospital.

These results, that playfulness remained relatively constant across time periods and settings, supports previous findings of O'Brien and Shirley (2001) who found playfulness scores to remain stable over several years. Bundy (1993) and Skard and Bundy (2008) suggest that playfulness consists of four factors that are highly associated with personal attributes. Intrinsic motivation, internal control, freedom to suspend reality, and framing all require the child to utilize psychosocial, emotional, and cognitive body functions. These characteristics may be more static in individuals over time versus physical skill level, which may explain why playfulness, especially measured by the ToP, might remain the same over time. Schkade and Schultz (1992) similarly suggested that when individuals face an occupational challenge, there is a press for mastery between the personal factors and the environmental factors. Perhaps in this study, the personal attributes of the children were more influential to their playfulness than environmental factors.

Though the results did not produce a statistically significant difference in playfulness between pre-admission and admission or between pre-admission and discharge, significant differences were found between admission and discharge. According to the mean rankings as seen in Table 6 and Figure 1, overall the children had higher levels of playfulness at discharge than at admission. Descriptive statistics indicated that scores were highest at discharge, followed by pre-admission, and then admission. These findings indicate that there were no statistically significant differences in playfulness between home and the hospital. However, the children were found to be

more significantly more playful at the end of their hospitalization than they were at the beginning of their hospitalization.

The small sample size may have affected the ability to obtain statistically significant results. When examining the combined measure playfulness for each participant, the ToP measure scores were higher at discharge than at admission for all but two of the participants (See Figure 1). One of these participants displayed the same level of playfulness at admission as she did at discharge. The increase in overall mean playfulness from admission to discharge suggests that the children were able to adapt to the environment and become more playful as they became more familiar in the hospital. This possibility is congruent with the findings of Study 1 and is discussed in greater depth in Chapter 6.

Saunders et al. (1999) found that young children displayed increased coping and lower levels of playfulness than older children. Although no formalized coping inventory was taken for this study, the participants in this study appear to have developed a sense of coping with the environment as exhibited by their increased playfulness by the end of the hospitalization. The participants in this study were under the age of six. Contrary to the findings of Shannon (1984), who found that preschool children were at greater risk for maladjustment to the hospitalization for not being able to cognitively understand why they were being hospitalized, this study revealed that the participants were able to still be playful and cope with the changes of environment between home and the hospital.

Study Limitations

This study possessed limitations that may have impacted the results. The primary limitations of this study relate to the sample of participants. Though twelve participants were originally enrolled in the study, only eight participants met the criteria to be considered a participant in the study. The small sample size limits the generalizability of this study.

In addition to only having eight participants, there were only two female participant compared to six males. At the time of the study, the inpatient feeding program was admitting a much larger percentage of male candidates to female candidates. Since the sampling for this study recruited participants from the pre-scheduled inpatient feeding program candidates, there was little control over the number of females selected. The participants were all from various cities or towns in the state of Texas, therefore limiting the results to the regional area in which the study was performed. Though the sample was small, gender-biased, and region specific, there was racial diversity with participants representing Caucasian, African American, and Hispanic racial backgrounds.

Another sampling limitation is the type of diagnoses the children were admitted to the hospital. Feeding disorder was the primary diagnoses of all the participants. Though some of the children required supplemental nutrition through gastrostomy tubes to meet their nutritional needs, the diagnosis of feeding disorder did not impact their cognitive or physical abilities as other types of diagnoses such as traumatic brain injury, cancer, or chronic medical illnesses might. Most studies on children who are hospitalized have been

performed on children with acute illnesses, and the children often reported being in pain or feeling sick (Board, 2005, Thurber, et al., 2007). The participants in this study were not acutely ill nor required additional medical equipment such as intravenous tubes or oxygen tubing that may have impacted their mobility for play. The nature of the feeding program enabled data collection prior to hospitalization; however, since most hospitalizations are due to a change in medical status, then the results may not be the same for those situations.

The conspicuousness of the video recordings also was a limitation to the study. Nearly all participants acknowledged the video camera during their play observations. Some children attended to the video camera frequently during their play. Some of the children may have altered their play to "impress" the person recording. Others may have been fearful of the camera and not played as naturally had they not been recorded. Though placing stationary cameras in the hospital was considered, the costs of installation and inability to capture the dynamic movement of the children during play along with the auditory comments made during play resulted in the decision to have the research assistant video tape the play sessions at the hospital.

Though the principal investigator was given permission to utilize the ToP and score it independently from Dr. Bundy after achieving adequate inter-rater reliability for scoring the ToP training videos, there was no other rater scoring the ToP aside from the principal investigator. This may have increased the chances of investigator bias. Attempts to reduce investigator bias were taken. The principal investigator was blinded to the time

each video was taken when watching and scoring the videos using the ToP. The principal investigator was also blinded to the demographic information such as diagnoses, ages, and previous hospitalization experience prior to watching and scoring the videos. These precautions enabled the principal investigator to score the videos based on the sheer playfulness exuded without having preconceived notions of the hypotheses testing or diagnostic features related that might have influenced play.

Implications for Future Research

The limitations of this study along with the findings produced several implications for future research. If this study were to be replicated a larger sample size involving more children, equal numbers of males and females, and children of varying ages and diagnoses, it could produce greater generalizability and more information about children's playfulness both at home and in the hospital. Even within this study, secondary analyses would extract more information about the elements that led to playfulness at home and in the hospital. One secondary analysis would be to investigate the four elements of playfulness (intrinsic motivation, internal control, freedom to suspend reality, and framing) and their relationship to overall playfulness. For example, were children who scored higher on items related to freedom to suspend reality or framing able to exhibit higher levels of playfulness than children who were not? A multiple regression study to evaluate these elements of playfulness may lead to a better prediction of whether a child will demonstrate increased playfulness in the hospital. Another secondary analysis

of diagnostic features related to the ToP scores may elicit a better understanding of the influence of diagnostic features on playfulness.

Clinical Implications

Though this study had limitations, there were some important clinical implications produced from this study. This study was the first study to evaluate playfulness among the same children prior to entering the hospital and during their hospitalization. Very few studies performed by occupational therapists have evaluated play among children who were hospitalized, and this study added new knowledge about play within the hospital environment. This study added support to the notion that playfulness is an expression of a child's adaptiveness. Even though children were exposed to the hospital environment, they were able to exude similar levels of playfulness that they had in their familiar home environment. This finding suggests that playfulness may occur more as a function of personal coping mechanisms and cognitive attributes of the child rather than the influence of the environment. Since playfulness was also found to increase from admission to discharge, there is evidence to support that when children are introduced to new situations, they are able to adapt to the demands of the environment over time and express this through playfulness.

Occupational therapists work with children to engage in meaningful occupations. Since play is considered a vital childhood occupation, it is important for occupational therapists to recognize the personal attributes that lead to playfulness and help foster improvement in these skills so that children can be more playful. This study suggested

that even children with lower levels of playfulness were able to improve their playfulness from admission to discharge. Occupational therapists can collaborate with Child Life Specialists and other health care team members to ensure hospitalized children have opportunities to play in order to help them adjust to the hospital experience.

CHAPTER V

STUDY 3

"Does the hospital environment help or hinder play?"

A quantitative analysis

Purpose

The third study evaluated the environmental influences on play. There is a lack of evidence-based research on why pediatric hospitals are designed the way they are and even fewer studies that evaluate how the hospital environment influences play. This study sought to answer the question, 'Do positive or negative elements of the environment facilitate or hinder playfulness among children?' The Test of Environmental Supportiveness (TOES, Skard & Bundy, 2008) was utilized to assess the environment for the availability of caregivers, peers, and play materials as well as the sensory qualities of the play environment and accessibility of play materials for the child. The same video data from Study 2 used for the ToP measures was used for the TOES. The hypothesis for Study 3 purported that elements of the environments with more supportive elements would be positively correlated with higher levels of playfulness.

Method

Design

Study3 employed the same repeated measures design as Study 2.

Participants

The same participants in Study 2 were utilized for Study 3. Study 3 evaluated the play environments for each participant included in Study2. The same video footage used to score the ToP was used for the TOES. Therefore, each participant had a total of five or six environmental assessments performed depending if pre-admission outdoor video was available. The demographic information of the eight participants may be found in Table 1 of Chapter 4.

Setting

The settings that were evaluated for environmental supportiveness were the same areas the children played in for Study 2. The settings included familiar indoor and outdoor settings in the home and community environment for pre-admission play observations. The indoor and outdoor hospital play areas are discussed in Study2.

Instruments

Outpatient Feeding Assessment (OFA), Infant Feeding Evaluation (IFE) and/or Admitting Evaluation Paperwork. Similar to the studies one and two, each participant's demographic information was obtained from a Xerox copy of the participant's OFA, IFE and/or admitting evaluation paperwork.

Test of Environmental Supportiveness. The Test of Environmental Supportiveness (TOES, Skard & Bundy, 2008) is a tool used to evaluate if the environment is facilitating or inhibiting playfulness and is located in Appendix D. This assessment is given only in conjunction with the ToP. The TOES contains 17 items that evaluate caregiver interaction, peer playmate interaction, older/younger playmate interaction, physical space, and sensory features of the environment. Each item has contradicting statements on either side of a 4 pt. dichotomous scale. Positive numbers indicate the environment is supporting play, and negative numbers that it is inhibiting it. This assessment requires the observer to identify the player, caregiver, peer playmates, and older or younger playmates. The observer must also determine apparent sources of motivation for the child upon initiation of the assessment. This assessment is designed to provide information regarding the environment for consultation between the parent/guardian and the therapist (Bronson & Bundy, 2001). The TOES has been found to have good reliability and validity (Harding, 1997) as well as high correlation with the ToP (Bronson & Bundy, 2001; Hamm, 2006).

Data Collection Procedure

The same video footage taken for Study 2 was used for Study 3 and therefore the procedure for this study was identical to the procedure for Study 2. The principal investigator scored the TOES immediately following scoring the ToP for each participant. Since the videos were observed in the same order for both Studies 2 and 3,

the randomized system the research assistant employed to blind the principal investigator was identical for Study 3.

Data Analysis

The TOES has traditionally been used as a clinical tool to educate the clinician about how the environment affects playfulness. Because the TOES produces dichotomous data with both negative and positive numbers, it does not produce a meaningful score (Skard and Bundy, 2008). In order to statistically analyze the scores produced by this assessment, the scores needed to be transformed into ordinal, ranked data. To determine the positive elements of the environment, each one or two were given a score of one. All non-applicable scores were given a zero. All of the positive aspects were added to produce a positive element TOES total score. To evaluate negative elements of the environment, each negative one and negative two were given a score of one. All non-applicable items were given a score of zero. All the negative elements were added to produce a negative element TOES total score.

ToP scoring takes into account both indoor and outdoor play sessions and produces a combined raw score, measure score and standard error. However, in this study due to inclimate weather, four participants were unable to have outdoor pre-admission taken. Since there were four participants who were missing outdoor pre-admission, a decision was made to separate the scores for the ToP keyform. According to the author, if data are missing, then a ToP keyform could be separated to represent the indoor or outdoor play scores independently (Bundy, personal communication on

February 16, 2011). In order to compare the separate indoor and outdoor environments with the child's playfulness score in each setting, independent scores were needed for each play observation. In order to determine playfulness as a whole for both indoor and outdoor settings based on the time play was observed, the combined raw and measure ToP scores were calculated. These scores enabled the principal investigator to detect if there were any differences in overall playfulness over time.

Four Friedman's tests were run to evaluate if there was a change in positive and negative elements of environmental supportiveness across time for both the indoor and outdoor settings. In order to test the hypothesis that more supportive elements of the environment would be positively associated with higher playfulness scores, a series of Spearman rank correlation tests were run to compare the ToP measure scores with the positive element TOES total scores. Similarly, to detect if negative elements of the environmental supportiveness were related to lower playfulness scores, Spearman's rank order correlation tests were run to compare the ToP measure scores with the negative elements TOES total scores.

Results

Overall, the home and hospital environments displayed more positive elements than negative elements across settings as illustrated in Tables 7 and 8. The positive elements of the indoor environments across settings remained constant, whereas the outdoor settings showed more variation in terms of positive elements, which can be seen

in Tables 7 and 8. The outdoor environment at admission yielded the most negative elements of any environment.

The results of the positive and negative element TOES total scores paired with the ToP measure scores for indoor settings may be viewed in Table 7. The results of the positive and negative element TOES total scores paired with the ToP scores for outdoor settings may be viewed in Table 8. The results of the Friedman's tests comparing the change in positive elements of the environment over time for indoor settings [X^2 (2, 8) = 1.462, p = .482] and outdoor settings [X^2 (2, 8) = .667, p = .717] revealed non-significant differences. When comparing negative elements of the environment over time, the Friedman's tests for indoor and outdoor settings similarly produced non-significant findings, X^2 (2, 8) = 2.966, p = .227 and X^2 (2, 8) = .677, p = .717, respectfully.

Table 7

Indoor ToP and Positive and Negative Element TOES Total Scores

Participant	Pre-admission			Admission			Discharge		
	ToP	P	N	ToP	P	N	ToP	P	N
Aiden	-.48	8.00	.00	-.17	8.00	3.00	.26	8.00	.00
Janelle	2.22	8.00	.00	1.07	10.00	4.00	1.52	8.00	3.00
Mateo	.33	11.00	.00	-.45	9.00	2.00	-0.48	6.00	2.00
Isaac	1.36	10.00	1.00	.56	.00	8.00	1.69	11.00	3.00
Sarah	.01	6.00	3.00	-.11	6.00	8.00	.43	8.00	3.00
David	.13	9.00	2.00	.68	11.00	5.00	-0.36	7.00	7.00
Joey	-1.37	7.00	4.00	-.75	9.00	2.00	-1.04	8.00	3.00
Caleb	.74	8.00	3.00	1.44	11.00	1.00	1.14	14.00	.00
Total Mean	.37	8.38	1.63	.28	8.00	4.13	.40	8.25	2.63

Note. ToP scores are the individual ToP measure scores for indoor settings at each data point, "P" represents the Positive Element TOES Total Score, and "N" represents the Negative Element TOES Total Score

Table 8

Outdoor ToP and Positive and Negative Element TOES Total Scores

Participant	Pre-admission			Admission			Discharge		
	ToP	P	N	ToP	P	N	ToP	P	N
Aiden	-	-	-	-.49	12.00	.00	-.25	8.00	5.00
Janelle	-	-	-	.29	9.00	5.00	-.07	4.00	3.00
Mateo	-.49	13.00	4.00	-.90	8.00	6.00	.29	8.00	.00
Isaac	.61	14.00	.00	.67	8.00	.00	1.42	11.00	3.00
Sarah	-.25	6.00	1.00	-.31	6.00	2.00	-.62	8.00	3.00
David	-.25	8.00	3.00	.81	10.00	1.00	-.25	8.00	.00
Joey	-	-	-	-.95	8.00	3.00	-.25	8.00	.00
Caleb	-	-	-	1.34	10.00	1.00	1.61	8.00	1.00
Total Mean	-.95	10.25	2.20	-.15	8.88	2.25	.24	8.88	1.38

Aiden, Janelle, Joey and Caleb did not have outdoor pre-admission video and therefore no ToP or positive and negative element TOES total scores are reported and are represented by a "-." The "P" represents the Positive Element TOES Total Scores and "N" represents the Negative Element TOES Total Scores.

The results of the Spearman's rank correlations between ToP measure and positive element TOES total scores are displayed in Table 9. Correlations were all none to moderate, and all were statistically insignificant.

Table 9

Correlations between Playfulness and Positive Elements of Environmental Supportiveness

Setting	Correlation value	Significance
Pre-Admission Indoor	.488	.220
Pre-Admission Outdoor	.316	.684
Admission Indoor	-.024	.955
Admission Outdoor	.160	.706
Discharge Indoor	.442	.273
Discharge Outdoor	-.141	.739

Note. * Indicates significant correlation below the $p>.05$ value.

The results of the Spearman's rank correlations between ToP measure and Negative Element TOES Total scores yielded the following findings are found in Table 10. Correlations ranged from low to high, with one correlation, pre-admission outdoor, approaching significance. It is important to note that the sample size was particularly small for this test since only data for four participants outside at pre-admission was available.

Table 10

Correlations between Playfulness and Negative Elements of Environmental Supportiveness

Setting	Correlation value	Significance
Pre-Admission Indoor	-.141	.789
Pre-Admission Outdoor	-.949	.051
Admission Indoor	.181	.668
Admission Outdoor	-.434	.283
Discharge Indoor	-.406	.319
Discharge Outdoor	-.507	.200

Note. * Indicates significant correlation below the $p>.05$ value.

Discussion

The results indicate that the positive and elements of environmental supportiveness did not significantly change across the settings. There were low to moderate correlations found between the number of positive or negative elements of environmental supportiveness across time. However, these correlations did not reach statistical significance and therefore may have been due to chance. These findings suggest that there was not a statistically significant relationship between elements of environmental supportiveness and playfulness. The results suggest that playfulness occurred independently of the elements of environmental supportiveness. The hypothesis that more supportive elements of the environment would be positively correlated with higher playfulness scores was rejected.

When examining the trends, five of the six correlations between negative elements of environmental supportiveness and playfulness produced negative relationships as seen in Table 4. This finding purports that for 83% of the play observations recorded for this study, the fewer the negative elements of environmental support, the higher the playfulness of the participant. Additionally as illustrated in Tables 1 and 2, on only two occasions of 44 play observations were there more negative than positive elements of environmental supportiveness as seen by Isaac and Sarah's admission positive and negative elements of the environmental supportiveness scores. There was only one occasion, David's indoor discharge session as illustrated in Table 1, when an equal number of positive and negative elements of the environmental supportiveness were found. These findings suggest that 93% of all the play observations performed for this study had more positive than negative elements of the environmental supportiveness.

Although there were more positive elements than negative elements of environmental supportiveness present in the play observations, the relationships between environmental supportiveness and playfulness that were found were not strong and were not statistically significant. This study suggested that for these participants at home and in the hospital, playfulness occurred independently of the environment. Contrary to previous literature that found a high correlation between playfulness and environmental supportiveness (Bronson & Bundy, 2001; Hamm, 2006), this study suggests that playfulness occurred independently of the environment.

Majority of the studies regarding pediatric hospitalization suggest that the negative aspects encountered by children such as anxiety (Board, 2005; Clatworthy, 1999; Thurber), boredom (Kuntz et al., 2006), decreased playfulness (Kielhofner et al., 1983), delayed play skill level (Gariepy & Howe, 2003; Kielhofner et al., 1983), and homesickness (Thurber et al., 2007) were due to the hospitalization experience. Though the hospital environment accounts for a part of the total hospitalization experience, perhaps other factors such as feeling ill, undergoing painful procedures, and being under the influence of medication had more of an influence on the development of the negative aspects associated with hospitalization than the physical, social, and cultural aspects of the hospital environment. In this study, the children were hospitalized for a primary diagnosis of feeding disorder. The children were not exposed to painful procedures nor given mood-altering medications. Perhaps the children in this study were healthier and able to more freely explore the hospital environment than children hospitalized for more acute illnesses.

Another interesting aspect to evaluate in this study is the difference in positive and negative elements of environmental supportiveness between the home and hospital environments. Statistically, there were not significant differences between the settings. When evaluating the scores as seen in Tables 7 and 8, the positive and negative elements of the environment are similar between the home and the hospital. The lack of significant differences in positive or negative elements of the environment between home and the

hospital suggest that the pediatric hospital in this study offered equal elements of environmental supportiveness as the participants' home environments.

Kielhofner et al. (1983) suggested that the hospital environment needed to have a designated play space that children recognized as a place where it was acceptable to play. Additionally, it was recommended that hospitals provide adequate sensory arousal within the playroom to entice the children to play that was not overwhelming for the children. When analyzing the positive elements of environmental supportiveness related to the physical and sensory environment from the TOES items, four or five positive elements were found for all eight participants, whereas only one negative element was found for three participants, and zero negative elements of the physical or sensory environment were found for the remaining six participants. This finding suggests that the pediatric hospital where the study took place had taken measures to ensure designated play spaces that provided a safe, accessible, and child-friendly environment that welcomed the children to play. The hospital made efforts to improve the environment by adding playful wall panels at an adequate height for young children to reach, rearranging the bookshelf and play space to make the toys more accessible, and adding brightly colored rugs to lure the children to play on the floor in the inpatient feeding wing.

Since the environment was found to be overall more supportive than less supportive, the lack of high levels of playfulness among all participants implies that playfulness was influenced by personal factors. Some children exhibited high levels of playfulness despite having supportive environments, whereas other children displayed

lower levels of playfulness even if the home and hospital environments were supportive. For example, Isaac was found to display above average levels of playfulness for typically developing children (ToP = .53), despite having no positive elements of the environment and eight negative elements of the environment during his admission outdoor play session. Contrastingly, Joey's ToP scores were below average levels of playfulness for children with disabilities in five of the six of his play settings. His element of environmental supportiveness scores showed more positive elements of the environment ranging from seven to nine elements than negative elements, ranging from zero to four. Yet despite having more elements of environmental supportiveness, Joey's ToP scores remained low, ranging from -.25 to -1.37. This finding suggests that playful children may exude playfulness regardless of whether or not the environment contains positive elements of supportiveness. Likewise, a child who is not playful may display a lack of playfulness whether the environment is supportive or not.

Study Limitations

This study shared many of the same limitations that Study 2 produced. The sample size was small, limited regionally, and disproportionately representative of males more than females. The missing outdoor pre-admission videos for half of the sample may have skewed the results as well. Additionally, this study was impacted by instrument bias. The TOES was created to be a clinical tool to help guide therapists in identifying potential positive and negative attributes of the environment that may help or hinder a child's play. Though the TOES has been used in other research studies (Bronson &

Bundy, 2001; Harding, 1997; Hindmarsh-Hook, 2005), the heavy emphasis on the social environment may have affected the scores of the participants in this study. Generally there were no older, peer, or younger playmates. Though these scores were marked as not-applicable, the lack of opportunities for social play may have decreased the overall positive elements that may have led to a higher correlation of environmental supportiveness and playfulness. Since the findings of this study refute the previous studies that found high correlations between the ToP and the TOES, further testing using the TOES in hospital environments should be performed to assess if the TOES is a valid tool to assess playfulness in a non-familiar environment.

Implications for Future Research

Secondary analysis of the data collected from this study may shed more light about the relationship between playfulness and elements of positive environmental supportiveness. Bundy, Waugh, and Brentnall (2009) suggested that there may be a level of maximal supportiveness of an environment, where once the environment reaches a certain level of support it does not further influence playfulness. Since the children were found to have overall high playfulness levels, this maximum level of supportiveness may have been reached. It is recommended that a secondary analysis of this data be performed to determine if a level of maximum supportiveness was achieved. The results of this analysis may explain why playfulness and environmental supportiveness were not found to produce significant correlations. Additionally, evaluating the relationships between the components of playfulness (intrinsic motivation, internal control, freedom to suspend

reality, and framing) with the social environment, physical environment, and sensory environment may lead to a greater understanding of why playfulness may or may not have been correlated with positive or negative elements of environmental supportiveness. If significant findings were to be found, a multiple regression analysis could be performed to determine if there are certain factors about the environment that predict playfulness of hospitalized children. Another beneficial study would be to qualitatively and quantitatively re-analyze the videos using a quantitative tool that more specifically evaluates the qualities of the toys and materials present.

Clinical Implications

This study produced important clinical implications. This study further supports the findings of Study 2 that playfulness may be more a function of personal attributes than a function of environmental supportiveness. Children with high playfulness were found to be playful regardless of the presence of positive or negative elements of the environment. Similarly, children who exhibited lower playfulness scores displayed consistently lower playfulness despite the presence of positive elements of environmental supportiveness. Occupational therapists working in a pediatric hospital setting may benefit from the findings of this study. As the AOTA societal statement on play purports (AOTA, 2008b, p. 707), "occupational therapists have an obligation to support, enhance, and defend a child's right to play... by establishing and restoring children's skills needed to engage in play, adapting play materials, objects and environments to facilitate optimal play experiences and advocating for safe, inclusive play environments that are accessible

to all." This study suggests that occupational therapists need to collaborate with the Child Life Specialists and other health care providers to modify the environment to better match the child's abilities in order to maximize playfulness.

CHAPTER VI

DISCUSSION

The purpose of this dissertation was to evaluate play and playfulness among hospitalized children and to investigate whether playfulness varied between their homes and the hospital. Research questions assessed in the three inter-related studies were 1) How do children play in the hospital environment? 2) Is playfulness among children different in their home environment than in the hospital? and 3) Does the hospital environment help or hinder children's playfulness? Since play is considered a method to achieve mastery and playfulness is an expression of a child's adaptiveness, it was hypothesized that 1) Children who exhibited higher levels of playfulness at home would also show higher levels of playfulness in the hospital; 2) Children would exhibit higher levels of playfulness at discharge from the hospital compared to admission to the hospital; and 3) Environments that contained a greater number of positive elements of environmental supportiveness would be associated with higher levels of playfulness.

How Do Children Play in the Hospital?

Both the qualitative and quantitative studies suggested that children do play in the hospital. The qualitative study produced several themes that supported the notion of play occurring among hospitalized children. The theme of "Play Emerges without Structured

Support" revealed that children appeared to find ways to be playful and engage in play without the structured support of the Child Life Specialists, parents, or other health care team members. Although the Child Life Specialists, parents, or other health care team members did help support play as found in the theme "Parents or Caregivers Support Play," when these caregivers were not present or as involved, play still emerged. The notion that play emerged without structured support differs from the study of Pass and Bolig (1993), who found children to engage in more play and display varied types of play when structured direction was provided by the Child Life Specialists.

The quantitative studies suggested that playfulness significantly increased between admission and discharge. This increase in playfulness was largely supported by the qualitative findings. The participants were noted to find enjoyment in engaging in challenging gross motor play as the length of hospitalization increased as evidenced by the themes, "Enjoyment of Gross Motor Play" and "It's Fun to Add Challenge." Playfulness may also have been enhanced by opportunities for social play. A prevalent theme that emerged was "Cooperative Play Emerged over Time." As the participants became more familiar with the environment, they began performing more parallel and cooperative play. They began sharing toys or playing with other children to perform a play activity with a common goal. The findings of this study contradict the findings of previous studies that found hospitalized children to engage in less active play and cooperative play than non-hospitalized peers (Gariepy & Howe, 2003; Kielhofner et al., 1983)

The type of play that emerged during hospitalization tended to be influenced by the availability and type of toys present, the accessibility of the play area, and the cognitive and physical skills of the participants. The qualitative study results found that the participants frequently participated in gross motor play as evidenced by the theme, "Gross Motor Play." The opportunities to participate in gross motor play were largely availed by the openness of the hospital floor plan and the willingness of the hospital staff and caregivers to allow play to spread to other areas as noted in the theme, "Play Space Expands over Time." The theme of "Open Space Facilitates Physical Play," revealed that children participated in more running, climbing, exploring, and pushing of toy push carts when they had large, open areas to do so. Fine motor play was found to occur more among the participants that displayed increased cognitive skills or physical abilities as seen in the themes, "Fine Motor Activity Depends on the Skill Level of the Child" and "Interest in Fine Motor Toys Dependent on the Interest and Skill Level."

The type of toys available was found to often influence the type of play exhibited as represented by the theme, "Type of Toys and Equipment Present Foster Different Types of Play." When the Child Life Playroom was open and participants had access to the play kitchen, pretend play items, figurines, and toy household items, the children tended to engage in more imaginary, representational play. When these items were not as accessible, the children found enjoyment in participating in other types of play such as gross motor, physical, or sensorimotor play.

The qualitative findings did reveal similar play behaviors as reported in previous literature on play of hospitalized children. The themes of "Repetition of Actions," "Hospital Equipment and Staff Become Part of the Play Scene," "Wandering Around," and "Missing Toys from Home" all supported common findings of previous studies investigating play among hospitalized children. Gariepy and Howe (2003) reported that children with leukemia frequently repeated play scenarios especially those involving medical procedures. Kielhofner et al. (1983) found hospitalized children to display lower developmental stages of play and less playfulness than children who were not hospitalized. Board (2005), Kuntz et al. (1996), and Thurber et al. (2007) all alluded to children's play in the hospital being inhibited due to missing familiar toys or people from home. Perhaps in an attempt to better master the new hospital environment, the children were found to repeat play actions, imitate phrases, or actions performed by the health care team members and incorporate medical equipment into play.

The results of the three studies indicate that play occurred among hospitalized children. Various types of play occurred and may have been influenced by the availability of toys and other children or caregivers present, the space and accessibility, and the internal motivational, cognitive, and physical attributes of the participants. Participants in this study were found to engage in more cooperative play and incorporate more challenging activities to their play as time evolved.

Previous literature has suggested that play fosters motor performance (Knox, 1974, 2008; Takata, 1974) psychosocial well being (Freud, 1961; Erikson, 1963),

language development (Bruner, 1972), competency for future problem-solving (Reilly, 1974), and mastery (Erikson, 1963). Play provides a method for children to achieve mastery over challenges they may face and develop a better understanding about their capabilities within the context they are in. The results of this study suggested that children were able to achieve mastery over the new hospital environment through play.

Is Playfulness among Children Different in Their Home Environment than the Hospital?

The results of study two revealed no significant differences between the home and the hospital environments. Furthermore, playfulness was found to be strongly and significantly correlated across time periods. This finding suggests that children's playfulness remained stable regardless of whether the participants were at home or in the hospital. Children who were playful at home were playful in the hospital, whereas children who were not playful at home were similarly not playful in the hospital.

According to Skard and Bundy (2008), children with atypical development or who have disabilities have a mean ToP score of -.43 and children of typical development have a ToP score of .43. Considering that all of the children in this study had a primary diagnosis of feeding disorder and many had additional medical diagnoses, the participants of this study were categorized as children with disabilities. The participants within this study were found to have an average ToP measure score of .201 with a standard deviation of .694 with the two ToP measure scores that did not fit the ToP model excluded. This score falls between the typical and atypical means for playfulness. Similar to the findings

of Kielhofner et al. (1983) and Gariepy and Howe (2003) that found hospitalized children exhibit lower levels of playfulness compared to typically developing peers, children in this study were found to have lower ToP scores than typically developing children. Yet despite being less playful than typically developing children, the participants of this study were found be more playful on average than children of atypical development. This finding supports the statement postulated by the principal investigator that playfulness is a child's expression of adaptiveness. Since these children were found to be more playful than most children with disabilities, perhaps they were better able to adapt to the environmental change and find ways to be playful regardless of the setting.

Playfulness is a stylistic manner that involves approaching situations with creativity, flexibility and joy (Bundy, 1993; Skard & Bundy, 2008). In order for a child to be playful, the child must exude optimal intrinsic motivation, internal control, freedom to suspend reality and framing (Bundy, 1993; Skard & Bundy, 2008). These characteristics all require involvement of the body systems that regulate cognition, arousal, and attention (AOTA, 2008 a). Children who are able to exude these characteristics are able to have playful experiences when encountering new environments or challenges. The participants in this study were all found to be relatively playful and may have been able to adapt to the environmental challenges both at home and at the hospital in order to maintain high playfulness levels in familiar and unfamiliar environments.

The qualitative findings supported the idea that playfulness may have been influenced more by personal factors of the participants than environmental factors. When

evaluating the play behaviors exhibited by the participants in Study 1 with their ToP scores, many of the behaviors exhibited were similarly found at home and were consistent with behaviors typically associated with the other medical diagnoses each participant had. Aiden's scores indicate that he was more playful at discharge than at admission. Both his admission and discharge ToP scores fell below the average for children of atypical development. When analyzing the specific components of his ToP, Aiden was found to achieve the highest scores within the areas of intrinsic motivation and internal control during each play observation. He consistently illustrated lower levels of framing and freedom to suspend reality compared to the other elements of playfulness. This finding supports the findings of the qualitative study in that he was infrequently observed to enact novel functions to toys. Rather, if he did engage in pretend play, he tended to perform more representational play where he imitated daily actions he had seen before such as preparing or serving food. There was not a significant difference between his playfulness from inside to outside or from home to the hospital, indicating that he exhibited the same attributes of playfulness across environments. This finding also corroborates the qualitative findings in that he was noted to watch others, wander, and enjoy gross motor play both indoors and outdoors.

Janelle's playfulness scores were higher than the average typically developing child for both admission and discharge play observations. Her playfulness remained the same from admission to discharge; however, since her scores were higher than average for typically developing children, her scores indicate that she was very playful across all

settings. When analyzing the components of playfulness for Janelle, she exhibited high scores in intrinsic motivation across all play observations. Her scores for internal control and framing were higher in the hospital. The internal control factor of playfulness is comprised of items that require individual internal control and shared internal control. Since there were more children and adults in the hospital than in her home, she had more opportunities to share control with others. Her freedom to suspend reality was generally high with the exception of the discharge outdoor play observation. During this observation, there were few children around, and she was not welcomed to play by them. Also, no caregiver other than the research assistant was present, and she spent most of the session wandering around, watching others, and repeating the same actions while looking lonely. Her framing ability was generally high, which supported the finding of the qualitative research that she exhibited good social skills for detecting the needs of others and expressing her desires. Despite the low outdoor discharge scores, she was able to exude high playfulness in her indoor play observation in order to produce equal playfulness at discharge compared to admission.

Mateo's scores indicate that he exhibited below average playfulness when compared to other children with atypical development during his admission play observations. His playfulness scores increased by discharge, and he displayed above average playfulness skills for children with disabilities yet still lower levels of playfulness compared to typically developing children. His playfulness score at discharge equaled his playfulness score at home, indicating that over time he was able to adapt to

the environment and display similar playfulness in an unfamiliar environment as he was able to in his home environment.

When analyzing the components of Mateo's ToP, he was found to display higher levels of internal control and intrinsic motivation. He showed lower scores in his ability to suspend reality and even lower scores in framing. These findings corroborate the findings of his qualitative play observations. Mateo frequently preferred play activities that he could be in charge of and that allowed him to direct the scripted language of other players or the figurines. He tended to repeat the same play scenes and displayed less ability to change the play scenario based on the cues of other children. Often he was observed to seem oblivious to other children playing, indicating that he had difficulty reading the social cues of others and effectively communicating with his peers, as is frequently seen among children with autism (Spitzer, 2008). His play appeared to be similar both indoors and outdoors and at home and in the hospital, indicating that with the proper support from his mother, he could exude similar elements of playfulness across settings.

The finding that that children seemed to become more playful by the end of their hospitalization than at their admission may seem counterintuitive and contradicts the findings of previous studies that investigated play of hospitalized children. For example, Kuntz et al. (1996) found that hospitalized children exhibited less imaginative use of toys as the length of stay in the hospital increased. Previous literature indicates that there are particular factors that produced negative hospitalization experiences (Board, 2005;

Shields, 2001; Thurber et al., 2007). Pain was found to be a primary reason for why children disliked their hospitalization (Board, 2005; Clatworthy, 1999; Kortesluoma, 2008; Thurber et al., 2007). All of the participants in this study were admitted into the inpatient feeding program for a primary diagnosis of feeding disorder. The treatment included daily structured meals and various therapies. However, no children were subjected to painful procedures or surgeries during their hospitalization. This lack of exposure to painful procedures may have led them to be more playful. Furthermore, as they progressed through their hospitalization process, they were gaining more weight and eating a more nutritious diet. This potentially could have given the children more energy and strength and led to increased engagement with the environment.

Thurber, et al. (2007) suggested that family relationships prior to hospitalization were a major factor leading to a child's adjustment or maladjustment to the hospital experience. Admission to the inpatient feeding program is largely voluntary or a collaborative decision between the parents and the health care team. At least one parent is required to be at the hospital everyday and go through rigorous training in behavioral modification. The families of the participants in this study had all made a commitment to be present and involved in helping their children learn to eat a wider variety of food. The participants in this study may have exhibited increased playfulness over time due to the increased time spent with their parents in the hospital setting during their stay within the inpatient feeding program. The findings of Study one also supported this notion that good family relationships increased adjustment or adaptation to the hospital environment.

The results of this study suggest that playfulness was similar at home and in the hospital among the participants. Additionally, the participants were noted to improve their playfulness over the course of their hospitalization. These findings support the notion that playfulness is an expression of adaptiveness and that playfulness may be more attributable to personal characteristics than environmental factors.

Does the Environment Help or Hinder Playfulness?

The results yielded no significant differences in positive or negative elements of environmental supportiveness over time. Additionally, no significant correlations were found between the number of positive or negative elements of environmental supportiveness and playfulness for both indoor and outdoor settings. These findings suggest that playfulness was not related to positive elements of environmental supportiveness and that playfulness occurred independently from environmental supportiveness.

If the positive and negative elements of environmental supportiveness were not found to be related to playfulness, then an alternative explanation for why the children were playful needs to be evaluated. As the findings of Studies 1 and 2 suggested, the participants seemed to exude playfulness despite the physical limitations of their own bodies due to additional diagnoses and despite the lack of access to toys or other children. This notion supports Bundy's model of playfulness (Bundy, 1993; Skard & Bundy, 2008), which proposes that playfulness is more of a stylistic demeanor a child assumes to creatively and joyfully approach obstacles or situations. The cognitive, psychosocial,

physical traits, or personal attributes, as defined by the model of occupational adaptation (Schkade & Schultz, 1992), appeared to be more influential than the demands of the environment in terms of meeting the occupational challenge of playing within the hospital.

Overall, the home and hospital environments were found to have more positive elements than negative elements. Every participant's play environments for pre-admission was different because each child was filmed within a familiar indoor and outdoor setting within his or her home or community environment. These environments included family or living rooms, bedrooms, and kitchens. The outdoor areas included front yards, back yards, and neighborhood parks. The indoor hospital play areas offered more variety in toys and furniture than the outdoor hospital playground area. The participants played in the indoor play area within the inpatient feeding wing, the Child Life playroom, or in their own hospital rooms. The play area within the inpatient feeding area had many environmental modifications made throughout the course of the study. New furniture and playful and colorful rugs were added by the time the last four participants were admitted to the hospital. Also, the arrangement of the toys and storage spaces for the toys were changed during the course of the study, and these changes appeared to increase access to toys as observed in the play observations of the latter four participants. Additionally, the Child Life play room had variations in its availability of toys. When the playroom was open for unstructured playtime, the children had access to

toys, artistic supplies, and pretend-play items. Outside of playroom hours, the cabinets were locked, reducing access to many toys.

In contrast to the indoor play area, the outdoor playground housed stationary playground equipment with no additions made throughout the duration of the study. Both positive and negative elements of the outdoor playground were found to be identical at admission and discharge. Since the outdoor playground remained primarily static over time, the children may have adjusted to the environment and found new ways to become more playful on existing equipment, repeated the same actions, or wandered around instead of playing. The findings of Study 1 support these results as the themes "Adding Challenge Is Fun" and "Wandering Around" were found to be common among participants.

Overall, the environments were found to have more positive elements than negative elements, and the children were found to be more playful than children with disabilities. Bundy et al. (2009) performed a study that described the construction of a combined assessment of the ToP and the TOES that clinicians could use without adjusting scores using Rasch analysis. The findings suggested that once the environmental supportiveness reached a certain level, playfulness was no longer affected. Since all of the environments were found to contain a larger number of positive than negative elements, there may not have been a relationship between elements of environmental supportiveness and playfulness.

The findings of this study refute much of the previous literature that stated the hospital environment created negative outcomes, including anxiety, stress, home sickness and decreased opportunities for play and to exude playfulness (Board, 2005; Gariepy and Howe, 2003; Kielhofner et al., 1983; Thurber et al., 2007). However, upon closer examination of these studies, playfulness may have been inhibited because of the hospital experience the children encountered. These studies evaluated children who were ill and did not feel well. The children had been subjected to painful medical procedures or were suffering from painful conditions. The children were often isolated from other children or play materials for infection control purposes. The physical and sensory environments of these hospitals may not have been as detrimental to play of the children as the decreased personal motivation and ability were. The results of these three inter-related studies suggest that if the children were well enough to play, the hospital environment could be a fun place for them to exude playfulness.

Previous literature has suggested that socialization is important for play (Parten, 1932; Bruner, 1972; Bronson & Bundy, 2001; Skard & Bundy, 2008). Morgan (2010) suggested that hospitalization, especially single room occupancy, led to decreased opportunities for children to talk to and play with other children. Yet despite having individual rooms, the participants of this study were found to be playful and often engaged in social play. The findings of the Study 1 suggested that the social environment was influential in supporting play. The theme of "Parents or Caregivers Support Play" was one of the most dominant themes to emerge. In nearly every play session, parents or

other family members were present and helped support the playfulness of the children by modeling play behaviors, increasing access to toys, and responding playfully to the children's cues. Additionally, the "Sharing of Families" theme illustrated that the social environment was strengthened by the involvement of the other participants' caregivers in the play of all the qualitative participants.

The ability to interact with other children may have led to increased playfulness for those children who could read social cues to interact with other children. The theme "Cooperative Play Emerged over Time" suggested that when given the opportunities to engage with other children within a shared hospital environment, the children became more skilled at doing so over time. Framing, or the ability to read and give appropriate social cues, according to Bundy (1993, Skard & Bundy, 2008) is an important feature to sustain play. Even if the social environment contained numerous playmates and supportive parents, children needed to be able to recognize the cues given by others or communicate effectively with their peers or else they might have had a difficult time playing with others. The participants in this study who showed low levels of playfulness across settings exhibited less framing ability as noted in their ToP scores and consequently were less likely to initiate or sustain social play with other children. This finding suggests that the environment must be matched with the child's ability level based on personal attributes in order to be supportive. Having novel toys, enticing equipment, colorful backgrounds, and peers to play with may not be supportive if the

child does not have the intrinsic motivation, internal control, ability to suspend reality, or framing capability to engage with the objects or people in the environment.

The physical aspects of the hospital environment were found to be supportive as evidenced by the number of positive elements reported on the TOES. The qualitative findings similarly showed that the physical environment fostered play. The themes of "Open Space Facilitates Physical Play," "Play Space Expands over Time, " and "Furniture and People Serve as Play Surfaces or Obstacles," all added support to the notion that in this study, the physical environment was supportive of play among the participants. From the findings of Study 1, the number of and types of toys available seemed to influence play of the participants as seen in the theme, "Type of Toys and Equipment Present Foster Different Types of Play."

The results of study three revealed that were no significant relationships between playfulness and positive or negative elements of environmental supportiveness. Playfulness was found to occur independently of the elements of environmental supportiveness. Overall, the home and hospital environments were found to possess more positive elements of supportiveness, especially in the amount of caregiver support, accessibility, and availability of toys. Since the participants of this study were already playful, the number of positive or negative elements of environmental supportiveness may not have influenced their play.

Study Limitations

Majority of the study limitations were related to the sample. The sample was selected using convenience sampling and only consisted of three participants for Study 1 and eight participants for Studies 2 and 3. There were more males than females, and the children were relatively young, under the age of six. The children were hospitalized for a primary diagnosis of feeding disorder. This condition does not produce the same symptoms that a more acute illness or chronic disease may be associated with. The participants were not acutely ill or in pain due to painful symptoms or invasive medical procedures. They were not attached to medical equipment, which meant they had increased mobility to explore the environments than children who are constrained by medical tubing. The children in this study were not acutely ill, which may have skewed their playfulness and ability to master their home and hospital play environments.

The conspicuousness of the video camera could have affected the play behaviors exhibited by the participants. Despite the limitations listed, many precautions were taken to avoid investigator bias for both the qualitative and quantitative studies including the use of rigorous triangulation methods, becoming calibrated to properly administer the ToP, and remaining blinded to the diagnostic information and order of play videos for the quantitative studies.

Implications for Future Research

These three inter-related studies yielded interesting findings that contradict some of the previous literature about play of hospitalized children. Secondary analyses of the

results from these studies could be useful to better describe some of the findings. For example, "Sensory Seeking Behaviors" was found to be a common theme associated with the qualitative study. Correlating the sensory processing skills with the playfulness levels of the participants may elucidate more knowledge about the relationship between sensory processing and playfulness among hospitalized children. Evaluating the components of playfulness (intrinsic motivation, internal control, freedom to suspend reality, and faming) and their relationship to overall playfulness paints a picture about elements of playfulness that might make adaptation to the hospital and the ability to exhibit playfulness more successful. It is recommended that these studies be replicated on a larger scale to evaluate playfulness of children with varying diagnoses. Perhaps using an additional environmental measure along with the TOES is recommended to identify more specific properties about toys that lead to playfulness among hospitalized children.

Clinical Implications

The three inter-related studies produced several clinical implications for occupational therapists and other members of the health care team working with hospitalized children. The findings of these studies add new knowledge about how children play and exude playfulness in the hospital to the profession of occupational therapy and other health care professions. The findings of these studies suggest that hospital environments have vastly improved and can produce similar levels of environmental supportiveness as environments. These studies revealed that if children were not too ill, they were able to playfully engage within the context of the hospital.

Though occupational therapists aim to improve occupational performance of their clients in naturalistic contexts, the results of this study showed that for children who are forced into unfamiliar hospital environments, play can still occur and children can be playful. Furthermore, playfulness appeared to be more related to personal attributes of the participants rather than the positive or negative elements of the environment. The results suggest that occupational therapists can collaborate with Child Life Specialists and other health care team members to identify the personal factors associated with playfulness and ensure that the environment produces an optimal match in order to promote playfulness among hospitalized children.

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APPENDIX A

Timeline of Dissertation Studies

The following is a timeline of data collection, analysis, and dissemination of the dissertation studies.

August 2009

- Obtained informed consent from the research entity of the hospital where the study was performed

December 2009

- Received IRB approval from Texas Woman's University

January 2010

- Begin data collection for Studies 1, 2, and 3

February 2010

- Completed data collection for Study 1

December 2010

- Ended data collection for Studies 2 and 3

January 2011

- Began data analysis

April 2011

- Dissemination of results
- Dissertation defense
- Submission of manuscript to AJOT

APPENDIX B

Qualitative Observation of Play Form

Patient name: _____Place: Play Area Playground

Date: _____ Time of Observation _____ to _____

Physical:

Social:

Toys:

Pleasure:

APPENDIX C

Test of Playfulness (ToP, Skard & Bundy, 2008)

TEST OF PLAYFULNESS (ToP) Version 4.0–5/05

	EXT – INT	INTENSITY	SKILFULNESS
Child's Name:	5 = Almost always	3 = Highly	3 = Highly skilled
Age:	4 = Most of the time	2 = Moderately	2 = Moderately skilled
Rater:	3 = Some of the time	1 = Mildly	1 = Slightly skilled
In the video I saw (date):	2 = Rarely or never	0 = Not	0 = Unskilled
	1 = Not Applicable	NA = Not Applicable	NA = Not applicable

ITEM	EXT	INT	SKILL	COMMENTS
Is actively engaged				
Decides what to do.				
Maintains level of play sufficient to play				
Tries to overcome barriers or obstacles to play/stay with an activity				
Modifies activity to maintain challenge or make it more fun.				
Engages in playful mischief or pranks.				
Engages in activity for the sheer pleasure of it (process) rather than primarily for the end product				
Pretends to be someone else; to do something else; that an object is something else; that something else is happening				
Incorporates objects or other people into play in progressive, flexible and creative ways				
Negotiates with others to have needs/ desires met.				
Engages in social play				
Supports play of others.				
Enters a group already engaged in an activity.				
Initiates play with others				
Conveys or plays.				
Shares (toys, equipment, friends, ideas).				
Gives socially appropriate cues (facial, verbal, body) that say, "this is how you should act/react to it."				
Responds to others' cues.				
Exercises control over affect during play.				
Interacts with objects.				
Transitions from one play activity to another with ease.				

Figure 4-9
ToP (page 1 of 2).

From Skard, G. & Bundy, A. C. (2008). Test of Playfulness. In L.D. Parham & L.S. Fazio (Eds.), *Play in occupational therapy for children.* (2nd ed., pp.71-93). St. Louis: Mosby Elsevier.

APPENDIX D

Test of Environmental Supportiveness (TOES, Bundy, 2003)

TEST OF PLAYFULNESS (ToP) Version 4.0–5/05

Child's ID: _____

Age: _____

Rater: _____

In the video: I see (Circle):

EXTRINSIC

5 = Almost always
4 = Most of the time
3 = Some of the time
2 = Rarely or never
NA = Not Applicable

INTENSITY

3 = Highly
2 = Moderately
1 = Mildly
0 = Not
NA = Not Applicable

SKILFULNESS

3 = Highly skilled
2 = Moderately skilled
1 = Slightly skilled
0 = Unskilled
NA = Not Applicable

ITEM	EXT	INT	SKILL	COMMENTS
Is actively engaged				
Decides what to do.				
Maintains level of play sufficient to play				
Tries to overcome barriers or obstacles to play/self while playing				
Modifies activity to maintain challenge or make it more fun.				
Engages in playful mischief or teasing.				
Engages in activity for the sheer pleasure of it (process) rather than primarily for the end product				
Pretends (to be someone else; to do something else; that an object is something else; that something else is happening)				
Incorporates objects or other people into play in unconventional or humorous and creative ways				
Negotiates with others to have needs/desires met.				
Engages in social play.				
Supports play of others.				
Enters a group already engaged in an activity.				
Initiates play with others				
Queries or jokes.				
Shares toys, equipment, friends, ideas).				
Gives socially unacceptable cues (facial, verbal, body) that say "This is how you should not treat me."				
Responds to others' cues.				
Demonstrates emotional control during play.				
Interacts with objects.				
Transitions from one play activity to another with ease.				

Figure 4-9
ToP protocol sheet.

From Skard, G. & Bundy, A. C. (2008). Test of Playfulness. In L.D. Parham & L.S. Fazio (Eds.), *Play in occupational therapy for children.* (2nd ed., pp.71-93). St. Louis: Mosby Elsevier.

APPENDIX E

Curriculum Vitae

KATHERINE SHAWN RYAN, MOT OTR
Katherine.ryan@rockhurst.edu

April 2, 2011

Education

Texas Woman's University-Dallas, TX
Doctoral candidate in PhD Occupational Therapy Program, defended dissertation on April 1, 2011, projected to graduate in May of 2011
2005-Present

Rockhurst University- Kansas City, MO
Master of Occupational Therapy, 2003

Rockhurst University- Kansas City, MO
Bachelor of Arts, 2001
Major: Psychology Minors: Theology, Communication Sciences and Disorders

Professional Certification/Licensure

Registered occupational therapist in Missouri License number: 2009014575
Registered occupational therapist in Kansas License number: 17-02572
Registered occupational therapist in Texas License number: 110938
National Board of Certification of Occupational Therapists
Certificate number: 1068111

Employment

Assistant Professor/ Pediatric Educator at Rockhurst University, Kansas City, MO
August 2009-Present
Preparation of curriculum content and teaching of Pediatric and Developmental Disorders Affecting Occupations, Therapeutic Intervention III: Pediatrics, Research II: Design and Analysis Lab, Occupations across the Lifespan, and Research III: Proposal Development. Faculty duties also include serving on the OT curriculum committee, interviewing prospective students, speaking at graduate admissions events, and serving as the faculty advisor for the Student Occupational Therapy Association.

PRN Occupational Therapist at the Rehabilitation Institute of Kansas City, MO
October 2009- Present
Provide PRN OT services to children, adolescents and adults in the outpatient and day neuro programs. Pediatric diagnoses include traumatic brain injury, stroke, cerebral palsy, status/post cancer resection, encephalopathy, and other

neurological disorders. Adult diagnoses include stroke, spinal cord injury, multiple sclerosis, Shingles, Guillain-Barre syndrome, meningitis, status/post cancer resection, and traumatic brain injury.

Part-Time Occupational Therapist at Children's Therapy Group, Overland Park, KS
July 2010- Present
Provided OT services and swim lessons to children with special needs. Primarily provide sensory integration treatment to children with diagnoses of sensory processing disorder, sensory integration dysfunction, dysgraphia, and visual motor integration/visual perceptual deficits.

PRN Occupational Therapist (III) at Our Children's House at Baylor-Dallas, TX
2004-Present
Provide PRN OT services to inpatient children at OCH. Patient populations include children with traumatic brain injury, spinal cord injury, encephalitis, multiple trauma victims, non-accidental brain injury, pulmonary disease, and Guillain-Barre syndrome.

Occupational Therapist (III) at Our Children's House at Baylor-Dallas, TX
2004-2009
Provide outpatient OT services to children at a pediatric rehabilitation hospital at Baylor University Medical Center in downtown Dallas, TX. Patient populations include children with sensory integration dysfunction, feeding disorder, PDD/autistic spectrum disorder, developmental delay, traumatic brain injury, muscular dystrophy, dyslexia, dysgraphia, and Down syndrome. Precepted new OT staff, performed clinical mentoring, and supervised OT students. Served on the feeding team and aquatic team. Prior to leaving Dallas, had begun program development for a multidisciplinary NICU follow up clinic. Since moving to Kansas City this position has transferred to a PRN status during the remainder of the dissertation data collection phase.

Occupational Therapist (I) at Baylor Specialty Hospital, Dallas, TX
2003- 2004
Provided OT services to adults and older adults at a specialty, long-term acute care hospital associated with Baylor University Medical Center in Dallas, TX. Patient diagnoses included orthopedic reconstruction, COPD, congestive heart failure, diabetes, wound care, deconditioning, AIDS, cancer, stroke, and traumatic brain injury.

Summer Intern at Transition Age Program, Wichita, KS
2001-2002

Coordinated and marketed a summer camp for children and adolescents for children with mental illness. Trained adolescents and young adults ages 14-24 on independent living skills, self-advocacy and transitional employment

TEACHING

Academic Teaching Experience

Assistant Professor in the Occupational Therapy Department at Rockhurst University.
2009- Present
Preparation and teaching of the following courses: Research Lab II: Design and Analysis (OT 5660), Research III: Proposal Development (5700), Occupations across the Lifespan (5780), Pediatric and Developmental Disorders Affecting Occupations (OT 6410), and Therapeutic Intervention III: Pediatrics (OT 6420)

Teaching Practicum for OT 5322.57/58: Occupational Adaptation: Birth to Adolescence Laboratory
2007
Assisted in course planning, teaching, and grading of the pediatric laboratory class. Developed lesson plans, teaching activities, evaluation measures for the pediatric feeding and sensory integration lectures. Participated in weekly blackboard discussions, graded skill check-offs, arranged a guest lecture, and assisted pediatric professors.

Clinical Teaching Experience

Clinical Preceptor
Our Children's House at Baylor
2007, 2009

Clinical Instructor of Level II occupational therapy student
Our Children's House at Baylor- Dallas, TX
2007, 2008

Clinical Instructor of Level I occupational therapy student
Our Children's House at Baylor- Dallas, TX
2005, 2007

SCHOLARSHIP/CREATIVE ACHIEVEMENTS

Presentations at Professional Meetings

April 2011: Scheduled to present at the American Occupational Therapy Association annual conference in Philadelphia, PA on "Measuring the Efficacy of Constraint-Induced Movement Therapy on Adolescents to Improve Upper Extremity Function and Participation in Childhood Occupations."

April 2010: Presented at the Kansas City chapter meeting of the Missouri Occupational Therapy Association conference on "A, B, C...Not as Easy as 1, 2, 3: Understanding and Treating the Child with Dyslexia." Kansas City, MO.

September 2009: Presented at the Kansas Occupational Therapy Association conference on "The Pastime of Play: The Role of OT in Evaluation and Promotion of Play in Children." Lawrence KS.

September 2009: Co-presenter at the Kansas Occupational Therapy Association Conference September 11, 2009 on "A,B,C...Not as Easy as 1, 2, 3: Understanding and Treating the Child with Dyslexia." Lawrence, KS.

February 2009: Presented at the Vanderkoii Endowed Lecture at Texas Woman's University on "Sensory Processing: A New Model for Diagnosis--Helpful Strategies for Occupational Therapy Evaluation and Intervention of Children With Sensory Processing Problems." Dallas, TX

March 2008: Presented at the Doctoral Research Exchange Symposium on "The Effect of Hospitalization on Play: A Quantitative and Qualitative Analysis- Houston, TX

October 2007: Presented at the Texas Occupational Therapy Association State Conference: Mountain Central Conference on "A, B, C.... Not as Easy as 1, 2, 3: Understanding and Treating the Child with Dyslexia." Houston, TX

October 2007: Presenter at the Texas Occupational Therapy Association State Conference: Mountain Central Conference on "When Taking a Bite Is Not That Easy: The Role of Occupational Therapy for Children with Feeding Disorder." Houston, TX

October 2007: Presented at the Region 10: Dallas Independent School District OT and PT Annual Conference on: "When Taking a Bite is not that Easy: The Role of Occupational Therapy for Children with Feeding Disorder in the School Setting." Richardson, TX

February 2007: Presented at the Trinity North District of the Texas Occupational Therapy Association meeting on "When Taking a Bite is not that Easy: Occupational Therapy Evaluation and Treatment for Children with Feeding Disorder." Dallas, TX

March 2006: Co-presenter at the Occupational Adaptation Symposium on "The Warf and Weft of Occupational Therapy." Houston, TX

October 2002: Poster Presenter at Kansas Occupational Therapy Association Conference on "Portable Sensory Integration System"- Lawrence, KS.

August 2002: Co-Presenter at Mid-States Conference on "The Transition Age Program: A Youth Clubhouse Model." Norfolk, NE

Educational Presentations

February 2011: Presented to the full faculty of Visitation Catholic Grade School on "Sensory Processing: Strategies for the Classroom." Kansas City, MO

January 2011: Presented to the occupational therapists of the Blue Valley School District of Kansas on "Visual Information Processing Evaluation and Intervention for the School-Based Therapist." Overland Park, KS

June 2009: Presented on "Feeding Evaluation for the School-based Therapist" to occupational therapists, speech language pathologists, and physical therapists at Frisco Independent School District annual education symposium. Frisco, TX

October 2008: Guest Lecturer for FS 5163: Play Therapy class on "Sensory Processing and Sensory Integration Disorders." Denton, TX

August 2008: Presented at the Head Start Program of Greater Dallas on "Sensory Integration: Basic Principles and Treatment Strategies." Dallas, TX

August 2008 Presented for Our Children's House at Baylor Parent Education In-service night on "Sensory Integration: Basic Principles and Treatment Strategies."- Dallas, TX

April 2008: Presented at Our Children's House at Baylor Campus Wide Quarterly OT In-service on "Autism, Emotions, and Sensory Integration: A Review of Recent Research and Implications for Treatment"- Dallas, TX

March 2008: Guest Lecturer for OT 5333: Occupational Adaptation: Birth to Adolescence at Texas Woman's University MOT Program on "The Use of Play in Occupational Therapy" - Dallas, TX

April 2007: Presented at Our Children's House at Baylor Campus Wide Quarterly OT In-service on "The Bruininks Oseretsky Test of Motor Proficiency, 2nd Edition (BOT-2): Administration and Scoring." Irving, TX

May 2006: Guest Lecturer for Therapy Professions Class at Yvonne A. Ewell Townview Center "An Overview of Occupational Therapy." Dallas, TX

March and May 2006: Co-presenter at Baylor School for Children: "Sensory Integration: Tips for Teachers." Provided an in-service to pre-school teachers about SI disorder. -Dallas, TX

January 2006: Presented at OCH Campus Wide Quarterly OT In-service on "A, B, C...Not as Easy as 1,2,3: Understanding and Treating the Child with Dyslexia." Our Children's House at Irving, TX

October 2005: Co-Presenter for Parent Education In-service at Our Children's House at Baylor-Dallas on "Sensory Integration Disorder: Basic Concepts and Treatment Principles" - Dallas, TX.

March 2003: Presented at staff in-services at Baylor Specialty Hospital and Children's Medical Center of Dallas on "Occupational Therapy Practice Framework." Dallas, TX

December 2002: Co-presenter of Graduate Capstone Project on "Changing the Face of Sensory Integration: A Mobile Delivery System." This culminating graduate project focused on the process of beginning a new service delivery mode in pediatric occupational therapy. Kansas City, MO.

Creative Achievements

2006: Occupational Therapy Level II Fieldwork Student Notebook
Created a student notebook including hospital policies, procedures, professional behaviors, fieldwork timelines, assignments, regional resources, abbreviation lists, and coma/ traumatic brain injury pathways. This notebook was used as the prototype for the other eight outpatient sites in the Our Children's House at Baylor system.

Honors and Awards

February 2006: Employee of the Month, Our Children's Hospital, Dallas, TX

March 2004: Baylor Five Star Spirit Award, Baylor Specialty Hospital, Dallas, TX

2002: Neuroscience Supplemental Instructor, Rockhurst University, Kansas City, MO

2001-2003: Occupational Therapy Scholar, Rockhurst University, Kansas City, MO

2001: Graduated Summa Cum Laude from Rockhurst University Honors Program, Kansas City, MO

Scholarly Works

Medrano, A. & Ryan, K. (2009). Motor Assessment. In R. Aspy, B. G. Grossman, and B. Myles (Eds.) *Texas Autism Resource Guide for Effective Teaching.* (122-133). Shawnee Mission, KS: Autism Aspergers Publishing Company.
This chapter evaluates various standardized and non-standardized motor assessments as they relate to multidisciplinary evaluation and curriculum planning for children with autism spectrum disorder (ASD). This chapter is embedded within a resource curriculum guide designed for educators and school-team members working with children with ASD autism spectrum disorders (ASD) within the state of Texas.

Ryan, K. & Medrano, A. (2009). Sensory Assessment. In R. Aspy, B. G. Grossman, and B. Myles (Eds.) *Texas Autism Resource Guide for Effective Teaching.* (134-147). Shawnee Mission, KS: Autism Aspergers Publishing Company.
This chapter evaluates various standardized and non-standardized sensory assessments as they relate to multidisciplinary evaluation and curriculum planning for children with autism spectrum disorder (ASD). This chapter is embedded within a resource curriculum guide designed for educators and school-team members working with children with ASD autism spectrum disorders (ASD) within the state of Texas.

Scholarly Research

2011 Sensory Processing and Playfulness in Hospitalized Children. This Capstone Research Project is collaboration between faculty and students. Students are analyzing the relationship amongst sensory processing skills and playfulness of hospitalized children. This is a secondary analysis of dissertation studies.

2011 Measuring the efficacy of the "Ready, Set, Go" sensorimotor program on the Occupational Performance of Preschool Children. This Capstone Research Project is collaboration among faculty, students, and community occupational therapists. Students will help collect pre- and post data on preschool children's occupational performance to determine if the sensory integration was effective for improving occupational performance.

2010 Measuring the effectiveness of constraint-induced therapy on children with neurological disorders to improve upper extremity function and participation in childhood occupations.

This study is a collaborative research project between Rockhurst University MOT students and practicing pediatric occupational therapists at the Rehabilitation Institute of Kansas City. This study employed a single-subject ABAB design to evaluate the efficacy of a CIMT summer camp intervention program on both children and adolescents with neurological disorders. Data collection was performed prior to the camp commencing in June of 2010, after camp ended in July of 2010, 6 months following discharge from the camp in late December of 2010 and is scheduled for one year post-camp in June of 2011. The results of this work in progress are to be presented as a poster on April 16, 2011 at the AOTA conference.

Doctoral Line of Research

In preparation for the dissertation requirements, three inter-related studies have been proposed and accepted by the doctoral committee. Human subjects' clearance was granted through Baylor Research Institute as well as Texas Woman's University in fall of 2010. Data collection commenced in January of 2010 and officially ended in December of 2010. Data analysis is nearly complete and a dissertation defense has been set for April 1, 2011. The three inter-related studies are described below.

Study 1: How Do Children Play in the Hospital: A Qualitative Analysis

This study involves a qualitative analysis of children with feeding disorder at free play in the hospital environment. Video naturalistic observation methods were employed. Data was interpreted using ethnographic qualitative methodology. Common themes among children were elicited.

Study 2: Playfulness among Children with Feeding Disorder at Home and in the Hospital

This study is a quantitative study designed to evaluate the level of playfulness among inpatient feeding children using a standardized measure. The Test of Playfulness (ToP, Bundy, Nelson, Metzger, & Bingaman, 2001) was used to assess playfulness prior to admission, admission, and discharge. A manuscript for is currently being constructed explaining the results of this study and will be submitted to AJOT by March 28, 2011.

Study 3: The Play Environment: Help or a Hindrance

This study is also a quantitative study designed to measure the environment's potential for facilitating or inhibiting play. The Test of Environmental

Supportiveness (TOES, Bronson & Bundy, 2001) was used to evaluate the hospital environment's capability to support play among children prior to admission, at admission, and at discharge.

PROFESSIONAL SERVICE

Academic Service Activities

August 2011- Scheduled to supervise a group of Rockhurst OT Level I fieldwork students at a community-based clinic for individuals with Hansen's disease in Ecuador.

August 2010 –Level I Fieldwork Supervisor for a group of Rockhurst MOT students performing a level 1 fieldwork and service-learning at a community-based clinic for individuals with Hansen's disease in Ecuador.

January 2010- Present: Faculty Advisor to the Student Occupational Therapy Association (SOTA). This duty involves meeting with class officers to devise SOTA goals and activities throughout the year, coordinate service opportunities, and OT promotion to the Rockhurst campus and Kansas City community

January 2010-Present: Co-chair of Rockhurst OT Department and University centennial celebration. This involves planning and coordinating a continuing education event for current students, faculty, and OT alumni in the Kansas City community. Marketing and selecting key note speakers are also integral components of this celebration planning process.

September 2009-Present: Serve as a faculty advisor to Rockhurst OT students managing the Kansas City Pro Bono Free Health Clinic on a rotating basis

Clinical Service Activities

2009: Clinical Coordinator of the NICU Follow-up clinic. This position involved researching other NICU follow-up clinics and evidence-based practice for neonatal follow-up care and developing a multidisciplinary assessment team. The position involved planning logistical considerations as well as marketing and piloting the program along with on-going quality assurance assessment.

2007- 2009: Outpatient Marketer for Our Children's House at Baylor.
This position involves marketing to potential referral sources for Our Children's House at Baylor and serving as a liaison between pediatricians and the outpatient clinic. Monthly visits are made to doctors' offices to speak with referral

coordinators, physicians, nurses and staff. In-services and monthly education projects are planned to inform referral sources of health observances or current clinical research.

2004- 2007: Member of the Reward and Recognition Committee at Our Children's House at Baylor.
Coordinated staff recognition for both the inpatient and outpatient teams at Our Children's House at Baylor. Created hospital-wide policy for continuing education days. Developed a reward system for excellence in health care, selected employee of the month and employee of the year candidates.

2003-2004: Healing Environment Committee at Baylor Specialty Hospital
Researched quality improvement strategies for the hospital. Participated in the creation of a chapel/prayer room, and purchase aesthetically calming objects/artwork to reduce anxiety and stress level of patients in the cardio-pulmonary wing.

Service to the Profession

American Occupational Therapy Association
Kansas Occupational Therapy Association
Missouri Occupational Therapy Association
Member of the Kansas City Pediatric Alliance
Texas Occupational Therapy Association, 2005- 2008
Kansas Occupational Therapy Association- Student Member 2000-2001

Service to the Community

Volunteer at the WELL
This is a community Christian ministry that serves individuals with mental illness of Dallas. Duties include preparing a meal, serving the meal, clean up and sharing in the liturgy celebration with the members.

Volunteer for the Hurricane Katrina Relief
Volunteered as a health professional at Reunion Arena where the Hurricane Katrina victims were temporarily housed in 2005. Brought numerous games, coloring books, and toys from the hospital and facilitated a playgroup for the children affected by Hurricane Katrina.

Volunteer counselor at Camp John Mark for Our Children's House at Baylor
Camp John Mark is a non-for profit summer camp for children with special needs. Supervised children in special needs sporting events, crafts and mealtime for the inpatient and outpatient families of Our Children's House at Baylor.

Volunteer for St. Thomas Aquinas Adult Singles Group
This project involved preparing a dish and serving it to the homeless in the Dallas community on a monthly basis.

White Rock Half Marathon and Relay Races 2004-2007 - Dallas, TX
These runs benefit the children of Scottish Rite Hospital in Dallas, TX

Polar Bear Plunge 2007, Kansas City, MO
This charity event benefits Special Olympic athletes in the state of Kansas.

Trick or Trot Run 2006 in Kansas City, MO
This run benefits Triality Inc., a non-for-profit agency serving adults and children with disabilities in the North Kansas City, MO area

OTHER

Significant Professional Development Activities
April 2011: Scheduled to attend and present at the AOTA annual conference in Philadelphia, PA

November 2010: Attended MOTA annual conference in St. Louis, MO

September 2010: Attended KOTA annual conference in Wichita, KS

April 2010: Attended AOTA annual conference in Orlando, FL

February 2010: Attended "Get Permission/Food Chaining Approach to Children with Feeding Problems" presented by Marsha Dunn Klein in San Antonio, TX

September 2009: Presented at and attended the Kansas Occupational Therapy Association Conference- Lawrence, KS

April 2009: Attended American Occupational Therapy Association Conference- Houston, TX

February 2009: Attended and presented at the Vanderkoii Endowed Lectureship at Texas Woman's University- Dallas, TX

December 2008: Earned Advanced Pediatric Certification through Texas Woman's University. This certification involved taking 12 credit hour pediatric courses related to pediatric outcomes and measures, pediatric neuroscience, pediatric motor behavior, and assistive technology for the pediatric population.

October 2008: Pediatric Aquatic Therapy presented by Rodna Bordner Dallas, TX

September 2008: Aquatic Therapy: Techniques and Intervention presented by Peggy Schoedinger, Dallas, TX

March 2008: Doctoral Research Exchange Symposium, Houston, TX

February 2008: "R2K: Autism, Emotions, and Sensory Integration"- This is the international research conference hosted by the Pediatric Therapy Network, Long Beach, CA

February 2008: Vanderkoii Endowed Lectureship at Texas Woman's University, Dallas, TX

January 2008: Understanding and Managing Vision Deficits presented by Mitchell Scheiman, O.D., F.A.A.O.,Dallas, TX

November 2007: International Dyslexia Association Conference: Literacy and Language in the Lone Star State, Dallas, TX

October 2007: Mountain Central Conference, Texas Occupational Therapy Association State Conference, Houston, TX

April 2007: American Occupational Therapy Conference, St. Louis, MO

November 2006: Mountain Central Conference, Texas Occupational Therapy Association, Irving, TX

March 2006: Occupation Adaptation Symposium, Houston, TX

February 2006: Vanderkoii Endowed Lectureship at Texas Woman's University, Dallas, TX

November 2005: International Dyslexia Association Conference: "Reading in the Rockies," Denver, CO

April 2005: Sensory Integration Challenge, Dallas, TX